SONY

CAMERA CONTROL UNIT

CCU-D50
CCU-D50P

SERVICE MANUAL

Volume 1 1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

Table of Contents

Manual Structure

Purpose of this manual 3
Related manuals 3
Contents 3

1. Service Overview

1-1. Check before System Setup 1-1
1-1-1. Connecting with DXC-D35/D35P 1-1
1-1-2. Connecting with DXC-D30/D30P 1-1
1-2. Connectors and Cables 1-2
1-2-1. Connector Input/Output Signals 1-2
1-2-2. Connection Connector 1-5
1-3. AUX RS-232C Communicating Function 1-6
1-3-1. Communication Specifications and Connection Sample 1-6
1-3-2. Switch Settings 1-6
1-3-3. SDI Mode Setting 1-6
1-4. Setting of Internal Switches 1-7
1-5. Location of Printed Wiring Boards 1-8
1-6. Removing and Reinstalling the Cabinet 1-8
1-6-1. Top Cover 1-8
1-6-2. Front Panel 1-8
1-6-3. Bottom Cover 1-9
1-7. Replacing the Switching Regulator 1-9
1-8. Replacing the Fuse 1-11
1-9. Replacing the Fan 1-11
1-10. Confirming the Software Version 1-12
1-11. Setting Items After Replacement of Board/EEPROM 1-12
1-12. Updating the Software 1-13
1-13. Circuit Protection Device 1-15
1-14. Description on Flexible Card Wire 1-16
1-14-1. Disconnecting/Connecting the Flexible Card Wire 1-16
1-14-2. Forming Before Installation 1-16
1-15. Removing and Reinstalling the Boards 1-17
1-15-1. SDI-77 Board 1-17
1-15-2. IF-879 Board 1-18
1-15-3. IF-884 Board 1-19
1-15-4. CN-2310 Board 1-19
1-15-5. CN-2311 Board 1-20
1-15-6. CN-2312 Board 1-20
1-15-7. PR-270/270A Board 1-21
1-15-8. Power Supply Board 1-22

1-16. Notes on Service of Power Supply (Switching Regulator) 1-23
1-16-1. Note on Tightening Screw of Ground Terminal 1-23
1-16-2. Note on Replacement of Part on the Power Supply Board 1-23
1-17. Recommended Replacement Part 1-27
1-18. Fixtures 1-27

2. Electrical Alignment

2-1. Preparation 2-1
2-1-1. Equipment Required 2-1
2-1-2. List of Adjustment Controls 2-1
2-1-3. Notes on Adjustment 2-1
2-1-4. Initial Settings 2-1
2-1-5. Making Signal Input Tools 2-2
2-2. VBS Video Level Adjustment 2-2
2-3. RGB Video Level Adjustment 2-3
2-4. GENLOCK, Return System Adjustment 2-5
2-4-1. Return Video Level Adjustment 2-5
2-4-2. GENLOCK/Return Video Level Adjustment 2-6
2-4-3. GENLOCK, SYNC Level Adjustment 2-7
2-4-4. SYNC CLIP Adjustment 2-7
2-4-5. Gate Pulse Phase Adjustment 2-8
2-4-6. Gate Pulse Width Adjustment 2-8
2-4-7. SDI/VBS Adjustment 2-9
2-5. SDI Free-running Frequency Adjustment 2-10
2-6. SIDE TONE Adjustment 2-11

Manual Structure

Purpose of this manual

This manual is the service manual volume 1 of Camera Control Unit CCU-D50/D50P.
This manual is intended for use by trained system and service engineers, and is provided information that is maintenance information and the information for service such as replacement of boards.

Related manuals

Besides this service manual volume 1, the following manuals are available.

- **Operating Instructions (Supplied with this unit)**
  This manual is necessary for the use and the operation of this unit.
  Part No.: 3-620-534-1X

- **CD-ROM Manual (Supplied with this unit)**
  This manual contains the operating instructions of CCU-D50/D50P, and the operating instructions of Camera Adaptor CA-D50.
  Part No.: 3-620-540-XX

- **Service Manual Volume 2 (Available on request)**
  This manual is provided information that is premised the parts level service (exploded views, block diagrams, board layouts, schematic diagrams, detailed parts lists and the like.) for this unit.
  If this manual is required, please contact your local Sony Sales Office/Service Center.
  Part No.: 9-955-364-2X

- **"Semiconductor Pin Assignments" CD-ROM (Available on request)**
  This "Semiconductor Pin Assignments" CD-ROM allows you to search for semiconductors used in Communication B&P Company equipment. Semiconductors that cannot be searched for on this CD-ROM are listed in the service manual for the corresponding unit. The service manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-XX

Contents

The service manual volume 1 is organized by following sections.

Section 1 Service Overview
Describes the board location, on-board switches, fixtures, board replacement, etc.

Section 2 Electrical Alignment
Describes electrical adjustment necessary for maintenance of the unit or replacement of parts.

Section 1
Service Overview

1-1. Check before System Setup

1-1-1. Connecting with DXC-D35/D35P

When connecting the Color Video Camera DXC-D35/D35P/D35WS/D35WSP to the CCU-D50/D50P, be sure to check the ROM version of the color video camera to be connected.
If ROM version is lower than the specified listed below, be sure to replace the ROM of the camera.

Model name	Board name	Ref. No.	ROM version
DXC-D35/D35P/D35WS/D35WSP	AT-144	IC102	Ver.1.21 and higher

1-1-2. Connecting with DXC-D30/D30P

When connecting the Color Video Camera DXC-D30/D30P/D30WS/D30WSP to the CCU-D50/D50P, be sure to replace the AT board of the color video camera to be connected.
If ROM version on the replaced board is lower than the specified listed below, be sure to replace the ROM of the replaced board.

AT Board

Model name	Replacement board
DXC-D30/D30P	AT-110 → AT-144
DXC-D30WS/D30WSP	AT-125 → AT-144

ROM

Board name	Ref. No.	ROM version
AT-144	IC102	Ver.1.21 and higher

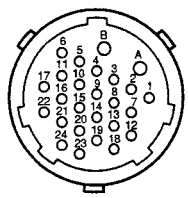
Note

When the board is replaced with the AT-144 board, be sure to check the switch settings of S101 on the AT-144 board referring to the Service Manual of DXC-D35/D35P/D35WS/D35WSP.

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

CAMERA (26P FEMALE)



(External view)

Default (In VBS Mode)

No.	Signal	Specifications
A	EXT DC (CCZ) OUT (X)	10.5 to 17.0 Vdc, 4 A (according to be CA to be connected to the unit)
B	EXT DC OUT (G)	GND for EXT DC (CCZ) OUT (X)
1 *2	EN VIDEO IN (X)	VBS = 1.0 V p-p ±2 %, sync negative Zi = 75 Ω ±5 % DC = 0 ±200 mV
2 *2	EN VIDEO IN (G)	GND for EN VIDEO IN (X)
3 *2	G/Y/Y VIDEO IN (G)	GND for G/Y/Y VIDEO IN (X)
4 *2	G/Y/Y VIDEO IN (X)	VS = 1.0 V p-p ±2 %, sync negative Zo = 75 Ω ±5 % DC = 0 ±200 mV
5 *2	R/R-Y/C VIDEO IN (X)	V = 714/700/286 mV p-p (BURST) ±2 % (75 % COLOR BARS) Zi = 75 Ω ±5 % DC = 0 ±200 mV
6 *2	R/R-Y/C VIDEO IN (G)	GND for R/R-Y/C VIDEO IN (X)
7 *2	B/B-Y VIDEO IN (X)	V = 714/700 mV p-p ±2 % (75 % COLOR BARS) Zi = 75 Ω ±5 % DC = 0 ±200 mV
8 *2	B/B-Y VIDEO IN (G)	GND for B/B-Y VIDEO IN (X)
9	MIC IN (X)	−20 dBm
10	MIC IN (Y)	Zi ≦ 600 Ω
11	MIC IN (G)	BALANCED
12	TALLY OUT	Zo ≧ 600 Ω
13 *1	S DATA (CHU) IN/OUT (M5A mode)	Zo ≧ 10 kΩ 0 — 3 ±0.5 V dc / 0.5 ±0.5 V dc
	S DATA OUT (TX7 mode)	Zo ≧ 10 kΩ 3 ±0.5 V dc — 2.5 ±0.5 V / GND
14	(Spare)	
15	(Spare)	
16	GEN/RET OUT (G)	GND for RET & GEN OUT (X)
17	INCOM GND	GND for AUDIO MONITOR
18	PROMPTER OUT (X)	VBS = 1.0 V p-p, sync negative Zo = 75 Ω ±5 %
19	PROMPTER OUT (G)	GND for PROMPTER OUT (X)
20 *1	S.DATA IN	M5A mode: OPEN TX7 mode: 3 ±0.5 V dc — 2.5 ±0.5 V / GND
21	RET & GEN OUT (X)	VBS = 1.0 V p-p, sync negative Zo = 75 Ω ±5 %
22	(Spare)	
23	INCOM (X)	Zi = 600 Ω
24	INCOM (Y)	

*1: The input/output signal of this pin varies according to selection of CCU command mode (M5A mode or TX7 mode) performed by the setting of system setting switch 1 of this unit. For the selection of CCU command mode, refer to the Operating Instructions of this unit.

*2: The input signal of this pin varies according to the settings of the system setting switches 4 and 5 of this unit in the VBS mode, or SDI mode. For the selection of VBS mode and SDI mode, refer to the Operating Instructions of this unit.

In VBS Mode

Output mode	System setting switch	
	4	5
RGB	ON	ON or OFF
Y, R-Y, B-Y	OFF	OFF
Y/C	OFF	ON

No.	RGB	Y, R-Y, B-Y	Y/C
1	EN VIDEO IN (X)	EN VIDEO IN (X)	EN VIDEO IN (X)
2	EN VIDEO IN (G)	EN VIDEO IN (G)	EN VIDEO IN (G)
3	G VIDEO IN (G)	Y VIDEO IN (G) *2	Y VIDEO IN (G) *1
4	G VIDEO IN (X)	Y VIDEO IN (X)	Y VIDEO IN (X)
5	R VIDEO IN (X)	R-Y VIDEO IN (X)	CHROMA VIDEO IN (X)
6	R VIDEO IN (G)	R-Y VIDEO IN (G)	CHROMA VIDEO IN (G)
7	B VIDEO IN (X)	B-Y VIDEO IN (X)	—
8	B VIDEO IN (G)	B-Y VIDEO IN (G)	—

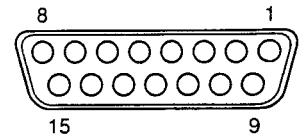
*1: Y/C
*2: COMPONENT

In SDI Mode

No.	Signal	Specifications
1	SDI IN (X)	0.8 V p-p Zi = 75 Ω 1±5 %, 270 M bps
2	SDI IN (G)	GND for SDI IN (X)
3*	AUX RX (G)	GND for AUX RX (X)
4*	AUX RX (X)	115200 bps (max.) 2.5 ±0.5 V p-p
5*	AUX TX (X)	
6*	AUX TX (G)	GND for AUX TX (X)
7	VBS IN (X)	VBS 1.0 V p-p Zi = 75 Ω ±5 %
8	VBS IN (G)	GND for VBS IN (X)

*: Using AUX RS-232C communicating function. (Refer to Section 1-3.)

INTERCOM/AUX/TALLY (15P FEMALE)

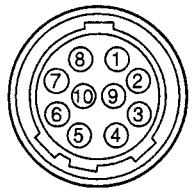


(External view)

No.	Signal	Specifications
1 *1	AUX RX (X)	115200 bps (max.) RS-232C-equivalent level
2	AUX/TALLY (G)	GND for AUX/TALLY
3	R TALLY IN	ON: GND
4	4W IN (X)	0 ±2 dBs
12	4W IN (Y)	
5	2W IN/OUT (X)	0 ±2 dBs
6	RTS IN/OUT (G)	GND for RTS IN/OUT (X)
7	4W OUT (Y)	0 ±2 dBs
8	4W OUT (X)	
9 *1	AUX TX (X)	115200 bps (max.) RS-232C-equivalent level
10	G TALLY IN	ON: GND
11	4W IN (G)	GND for 4W IN (X)
13	2W IN/OUT (G)	0 ±2 dBs
14 *2	RTS IN/OUT (X)	4W/2W/RTS mode: 0 ±2 dBs CLEARCOM mode: −10 ±2 dBs
15	4W OUT (G)	GND for 4W OUT (X)

*1: Using AUX RS-232C communicating function. (Refer to Section 1-3.)
*2: The specification of this pin varies according to the selection of intercom mode (4W, 2W, RTS or CLEARCOM mode) performed by the setting of intercom setting switches of this unit.
For the selection of intercom mode, refer to the Operating Instructions of this unit.

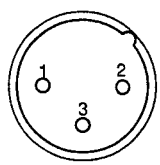
REMOTE (10P FEMALE)



(External view)

No.	Signal	Specifications
1	NC	
2	MONITOR OUT (X)	VBS = 1.0 V p-p ±10 %, sync negative Zo = 75 Ω ±5 % DC = 0 ±200 mV
3	MONITOR OUT (G)	GND for MONITOR OUT (X)
4	RX (RCP)_IN	RS-232C RX DATA-equivalent level Baud rate: 38400 bps
5	NC	
6	S DATA (RM) IN/OUT	Zi ≧ 10 kΩ GND, 3 ±0.5 V dc, 0.5 ±0.5 V dc
7	TX (RCP)_OUT	RS-232C RX DATA-equivalent level Baud rate: 38400 bps
8	NC	
9	GND	GND for 12 V
10	12.0 V OUT	10.5 to 17 V

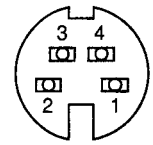
MIC (3P MALE)



(External view)

No.	Signal	Specifications
1	MIC OUT (G)	GND for MIC
2	MIC OUT (X)	Zo ≦ 600 Ω
3	MIC OUT (Y)	–20 dBm, Balanced

S VIDEO (4P FEMALE)



(External view)

No.	Signal	Specifications
1	Y OUT (G)	GND for Y OUT (X)
2	C OUT (G)	GND for C OUT (X)
3	Y OUT (X)	Y = 0.7 V p-p ±10 % Zo = 75 Ω ±5 % DC = 0 ±200 mV
4	C OUT (X)	C = 0.286 V p-p ±10 % (CCU-D50) C = 0.3 V p-p ±10 % (CCU-D50P) Zo = 75 Ω ±5 % DC = 0 ±200 mV

BNC Connector

PROMPTER VIDEO IN/OUT
1.0 V p-p, 75 Ω ±5 % (automatic termination), loop-through

GENLOCK IN/OUT
VBS 1.0 V p-p sync negative, 75 Ω ±5 % (automatic termination), loop-through

VBS OUT (1-2)
VBS 1.0 V p-p sync negative, 75 Ω ±5 %

R-Y/R/C OUT
R-Y: 0.700 V p-p, 75 Ω ±5 % (CCU-D50)
0.525 V p-p, 75 Ω ±5 % (CCU-D50P)
R: 0.7 V p-p, 75 Ω ±5 %
C: 0.286 V p-p, 75 Ω ±5 % (CCU-D50)
0.3 V p-p, 75 Ω ±5 % (CCU-D50P)

Y/G/Y OUT
Y: 1.0 V p-p sync negative, 75 Ω ±5 %
G: 0.7 V p-p, 75Ω ±5 %

B-Y/B OUT
B-Y: 0.700 V p-p, 75 Ω ±5 % (CCU-D50)
0.525 V p-p, 75 Ω ±5 % (CCU-D50P)
B: 0.7 V p-p, 75 Ω ±5 %

SYNC OUT
0.3 V p-p sync negative, 75 Ω ±5 %

MONITOR OUT
VBS 1.0 V p-p sync negative, 75 Ω ±5 %

RETURN VIDEO IN/OUT
VBS 1.0 V p-p sync negative, 75 Ω ±5 % (automatic termination), loop-through

SDI IN/OUT
0.8 V p-p, 75 Ω ±5 %, 270 Mbps

Jack

INTERCOM
MIC: −60 dBs 1 kHz, Zi = 10 kΩ
SPEAKER: 0 dBs, Zo = 15 Ω

1-2-2. Connection Connector

Connection made with the connector panels during installation or service, should made with the connectors or complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connection Connector/Cable
PROMPTER VIDEO GENLOCK VBS OUT R-Y/R/C, Y/G/Y, B-Y/B SYNC OUT MONITOR OUT RETURN VIDEO	1-569-370-12 PLUG, BNC
SDI IN SDI OUT	1-569-370-12 PLUG, BNC or Coaxial cable BELDEN 1694A, Bryant Broadcast LVC500 or equivalent
MIC OUT (3P FEMALE)	1-516-125-00 XLR, 3P Male or CANNON XLR-3-12C equivalent
CAMERA (26P FEMALE)	1-564-183-21 CONNECTOR, 26P Male or CCZ-A cable assembly CCZ-A25 (25 m) to CCZ-A100 (100 m)
INTERCOM/TALLY/ AUX (15P FEMALE)	1-506-582-11 D-SUB, 15P Male or JAE DA-25PF-N equivalent
REMOTE (10P FEMALE)	1-506-522-11 PLUG, CONNECTOR ROUND 10P, Male or HIROSE HR10A-10P-10P equivalent
INTERCOM	Mini jack 4 (ø3.5 mm) (Compliant with 1A 4-pole small plug)

1-3. AUX RS-232C Communicating Function

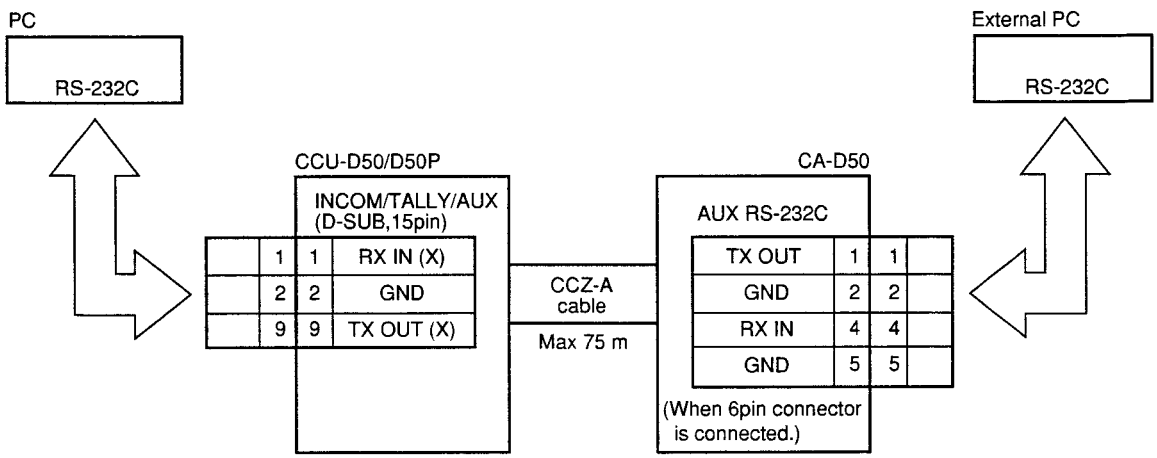
Between CCU-D50/D50P and camera adaptor CA-D50, it is possible to secure the RS-232C communication line using analog R-Y/R/C and Y/G/Y signal lines.
Use of this function enables it to transmit RS-232C communication between CCU and CA same as external personal computer. This transmission is performed using CCZ-A cable.
When using this function, while putting the CCU into the SDI mode, and the switch settings for both CCU and CA and modification of CA are required.
For the detailed switch settings and modification of CA, refer to the Service Manual Volume 1 of CA-D50.

1-3-1. Communication Specifications and Connection Sample

Communication specifications

Baud rate: 115200 bps
Maximum cable length: Use CCZ-A cable with 75 m or less in length.

Connection sample



1-3-2. Switch Settings

PR-270/270A Board (CCU-D50/D50P)

Ref. No.	Name	Switch setting
S1	Rch/AUX_TX	AUX_TX side (Factory setting: Rch)
S2	Gch/AUX_RX	AUX_RX side (Factory setting: Gch)

IF-880 Board (CA-D50)

For details, refer to the Service Manual Volume 1 of CA-D50.

1-3-3. SDI Mode Setting

Put he CCU into the SDI mode. For the SDI mode setting, refer to the Operating Instructions of CCU-D50/D50P.

1-4. Setting of Internal Switches

PR-270/270A Board

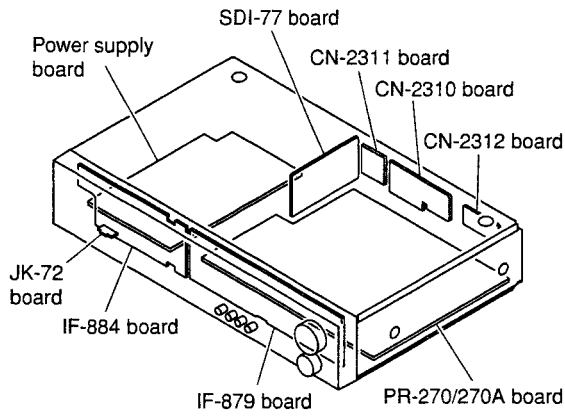
PR-270/270A BOARD (A SIDE)

Ref. No.	Name	Description	Factory setting
S1	Rch/AUX_TX	AUX RS-232C communicating function setting Rch: Outputs the R-Y/R/C signal supplied to the CAMERA connector from R-Y/R/C connector. (At normal use) AUX_TX: In the SDI mode, outputs the RS-232C signal supplied to the CAMERA connector from INTERCOM/TALLY/AUX connector. (At AUX RS-232C communicating function use)	Rch
S2	Gch/AUX_RX	AUX RS-232C communicating function setting Gch: Outputs the Y/G/Y signal supplied to the CAMERA connector from Y/G/Y connector. (At normal use) AUX_RX: In the SDI mode, outputs the RS-232C signal supplied to the INTERCOM/TALLY/AUX connector from CAMERA connector. (At AUX RS-232C communicating function use)	Gch
S1001	RTS 200 OHM	Turns ON/OFF 200 Ω termination when the external INTERCOM_RTS system is used.	OFF
S2001	ROM WRITE SW	RCP: At normal use ROM WRITE: Select when the software upgrading is executed.	RCP
S2002-1	TEST MODE	Factory use	OFF
S2002-2		Factory use	OFF
S2002-3		Factory use	OFF
S2004-4	MAINTENANCE mode	Turns ON/OFF the software version display.	OFF

IF-879 Board

For the settings of S101 (System setting switch) and S102 (Intercom setting switches) on the IF-879 board, refer to the Operating Instructions of this unit.

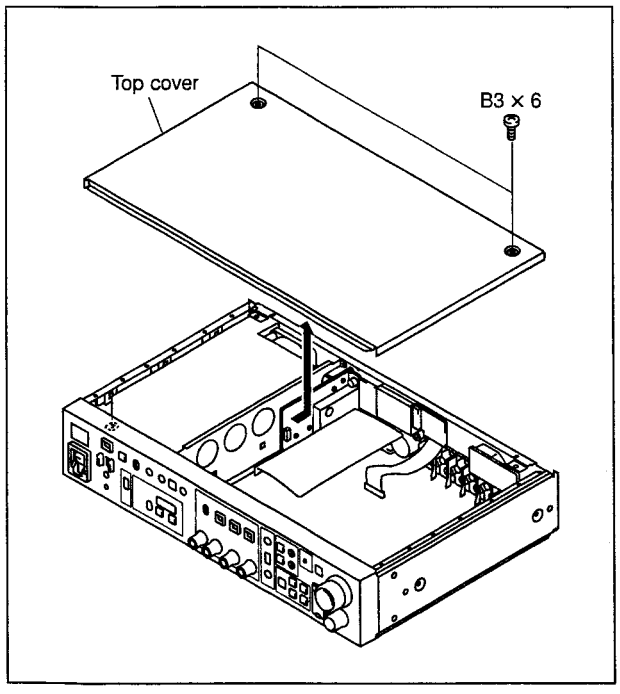
1-5. Location of Printed Wiring Boards



1-6. Removing and Reinstalling the Cabinet

1-6-1. Top Cover

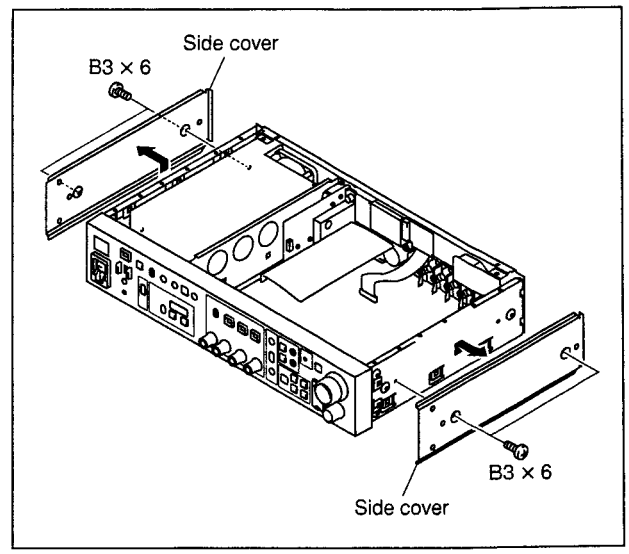
1. Remove the two screws, and remove the top cover in the arrow direction.



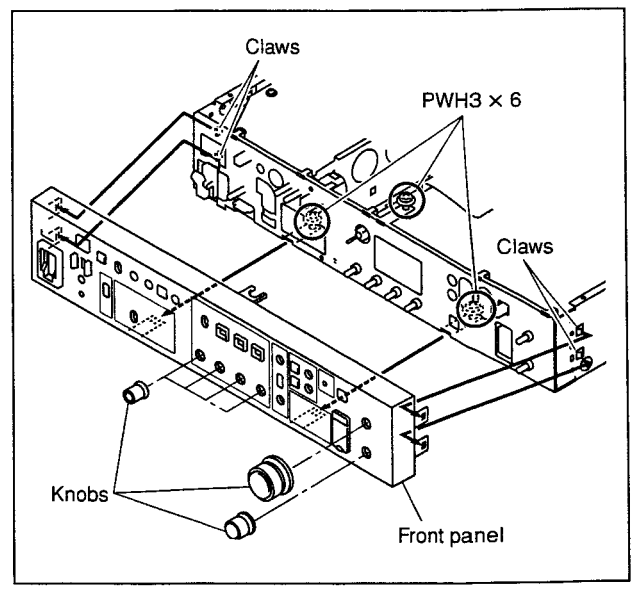
2. Reinstall the top cover in the reverse order of removal.

1-6-2. Front Panel

1. Remove the top cover. (Refer to Section 1-6-1.)
2. Remove the two screws, and remove the side cover in the arrow direction.



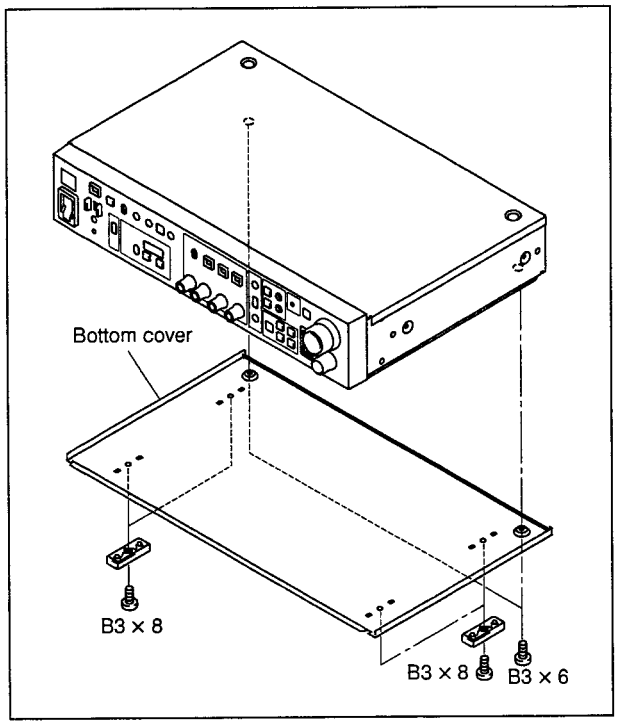
3. Remove the six knobs.
4. Loosen the three screws, and remove the front panel from the four claws on the side frames.



5. Reinstall the front panel in the reverse order of removal.

1-6-3. Bottom Cover

1. Remove the six screws, and remove the bottom cover.



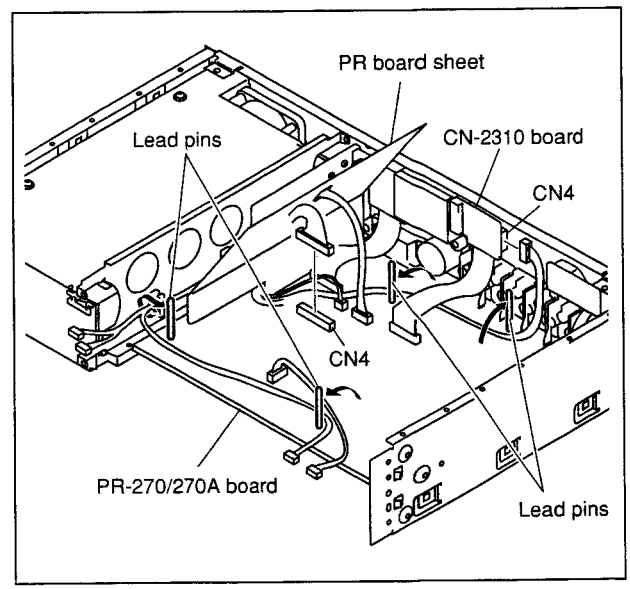
2. Reinstall the bottom cover in the reverse order of removal.

1-7. Replacing the Switching Regulator

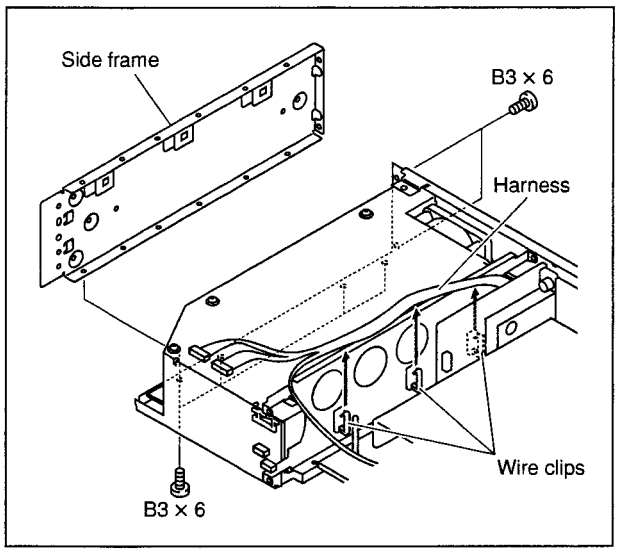
Note

Be sure to perform the insulation test after the switching regulator was replaced or serviced.

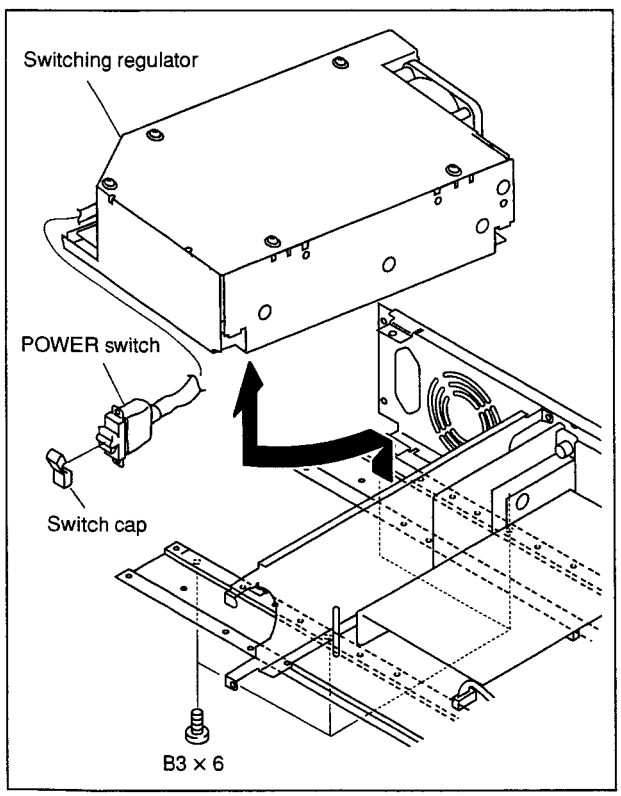
1. Remove the top cover, front panel and bottom cover. (Refer to Section 1-6.)
2. Pull out the front frame assembly. (Refer to steps 1 to 6 of Section 1-15-2.)
3. Lift up the four lead pins on the PR-270/270A board to unfasten the harnesses as shown in the figure.
4. Lift up the PR board sheet, and disconnect the harness from the connector CN4 on the PR-270/270A board.
5. Disconnect the harness from the connector CN4 on the CN-2310 board.



6. Remove the harness from the wire clips.
7. Remove the six screws, and remove the side frame.



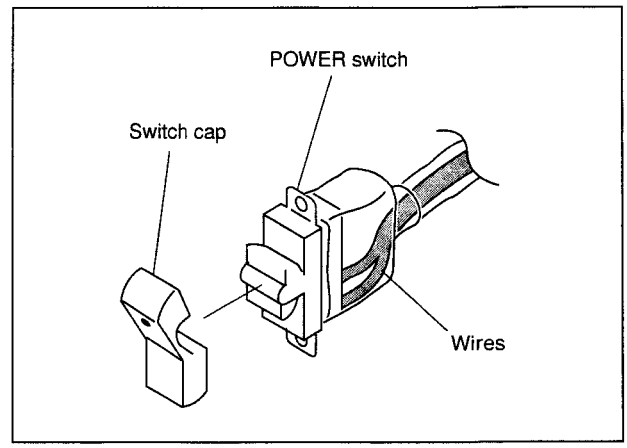
8. Remove the four screws, and remove the switching regulator in the arrow direction.
9. Remove the switch cap from the POWER switch.



10. Reinstall a new switching regulator in the reverse order of steps 1 to 9.

Note

Reattach the switch cap to the POWER switch so that its wires point downward.



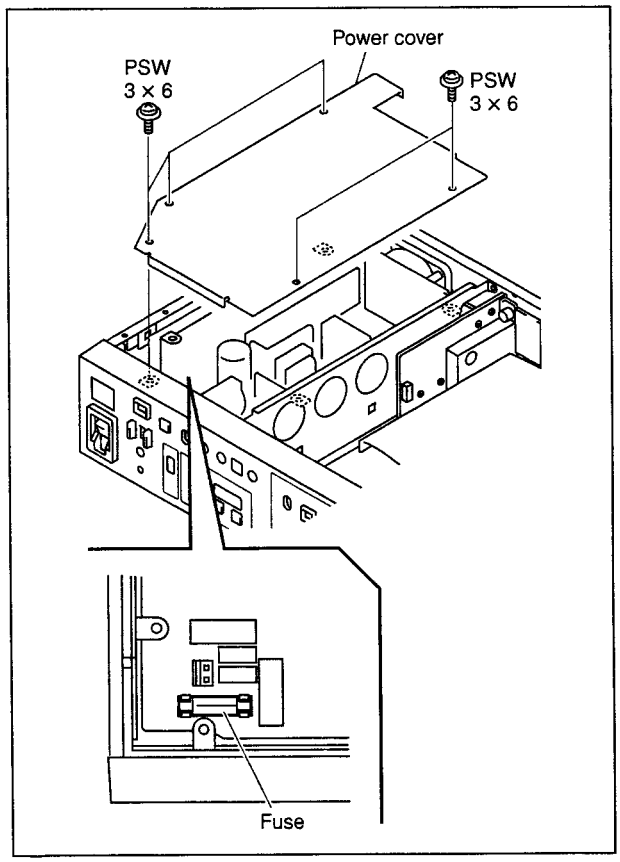
1-8. Replacing the Fuse

WARNING

The fuse is critical part for safe operation. Do exchange with the fuse authorized by the manufacturer, otherwise a fire and electrical shock may occur.

The following specified parts should be used in the case of replacement.
FUSE (H.B.C) 3.15 A 250 V: ⚠1-576-230-11

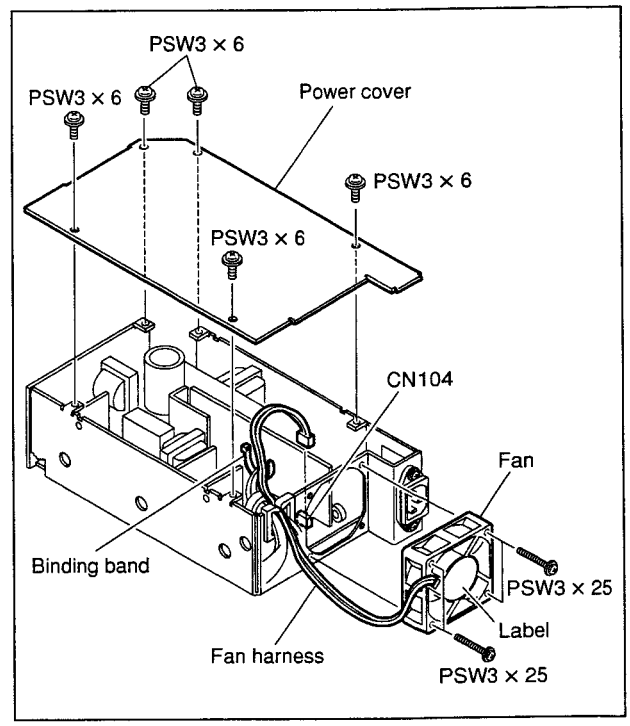
1. Turn OFF the POWER switch.
2. Remove the top cover. (Refer to Section 1-6.)
3. Remove the five screws, and remove the power cover.
4. Remove the fuse on the power supply board.



5. Reinstall a new fuse in the reverse order of steps 1 to 4.

1-9. Replacing the Fan

1. Remove the top cover, front panel and bottom cover. (Refer to Section 1-6.)
2. Remove the switching regulator. (Refer to Section 1-7.)
3. Remove the five screws, and remove the power cover.
4. Cut the binding band, and disconnect the fan harness from the connector CN104 on the power supply board.
5. Remove the four screws, and remove the fan.



6. Reinstall a new fan in the reverse order of steps 1 to 5.

Note

When reinstalling the fan, ensure that the fan is properly positioned and oriented as shown in the figure.

1-10. Confirming the Software Version

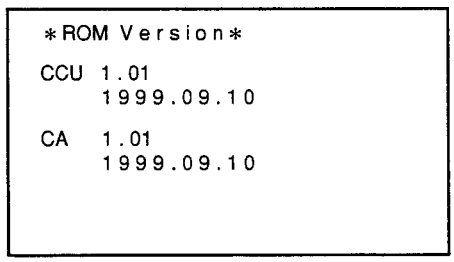
The software version can be displayed on the video monitor connected to the MONITOR OUT connector. To display the software version, it is necessary to set the switch on the PR-270/270A board.

Procedures

1. Turn OFF the POWER switch of this unit, and remove the top cover. (Refer to Section 1-6.)
2. Set the switch S2002-4 on the PR-270/270A board to ON. (Refer to Section 1-4.)
3. Connect the video monitor to the MONITOR OUT connector.
4. Turn ON the POWER switch of this unit, and light off (dark) the MENU button of the MENU section on the front panel by pressing the MENU button.
5. Press the SELECT up and down buttons on the MENU section and display the "ROM Version" page. Confirm the software version of this unit.

   Note

   The software version of CA is only displayed when the camera adaptor CA-D50 is connected and CCU-D50/D50P is put into the TX7 mode.
   For the setting of TX7 mode, refer to the Operating Instructions of CCU-D50/D50P.



Video monitor

6. Turn OFF the POWER switch of this unit, and set the switch S2002-4 on the PR-270/270A board to OFF.
7. Reinstall the top cover.

1-11. Setting Items After Replacement of Board/EEPROM

The EEPROM (IC111) is mounted on the IF-879 board. When replacing the IF-879 board or EEPROM (IC111) on the IF-879 board, perform the following settings referring to the Operating Instructions of this unit.

Settings After Replacement of Board/EEPROM

- Menu Settings
  Refer to the "Changing Settings" of the Operating Instructions.
- Settings of Shutter Speed and Clear Scan Speed.
- Settings of AUTO KNEE, AUTO IRIS and ATW.

1-12. Updating the Software

The software of this unit can be updated by the following procedures.

Note

When the software is updated, the setting data of the front panel and menu stored in the camera control unit are initialized, then reset these data. (Refer to the Operating Instructions.)

Equipment

- Personal computer (Here and after abbreviated to PC.)
  Serial port: 9-Pin D-sub connector
  Terminal software for serial port connection
  Note
  The screen differs according to the terminal software to be used.

- RS-232C interface cable
  (Sony part No.: J-6510-120-A)
- ROM DATA for software updating:
  (CCUD50_Vxxxx.xho)*
- LOAD module for software updating:
  (CCUD50LD_Vxxxx.xho)*

  *: Vxxxx shows the version No.

Preparation

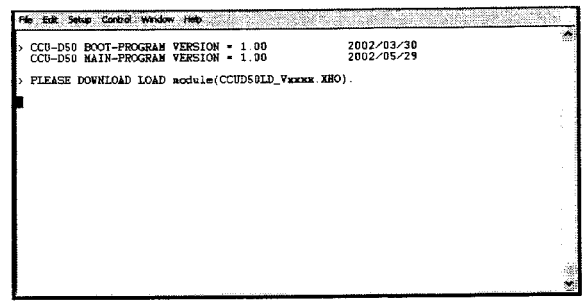
Download the ROM DATA (CCUD50_Vxxxx.xho) and LOAD module (CCUD50LD_Vxxxx.xho) to PC.

Procedures

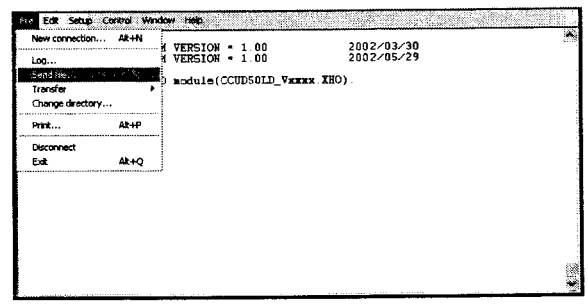
1. Remove the top cover. (Refer to Section 1-6.)
2. Set the switch S2001 (J-8) on the PR-270/270A board to ROM WRITE side.
3. Connect the RS-232C interface cable to the connector CN16 (J-8) on the PR-270/270A board.
4. Connect the RS-232C interface cable to RS-232C port (D-sub 9P) of PC.
5. Run the terminal software, and set the communication port as follows.

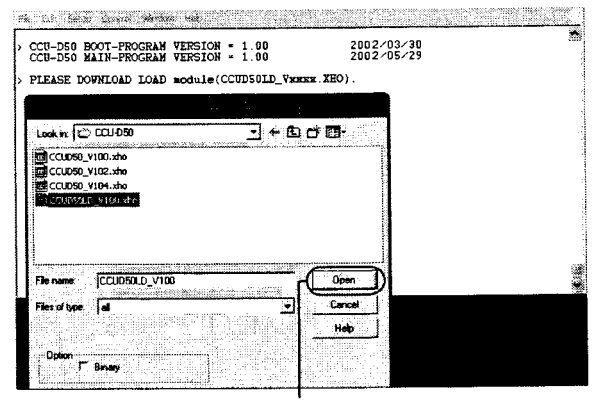
   Baud rate: 38400 bps
   Data bits: 8
   Parity bit: Non
   Stop bit: 1
   Flow control: Xon/Xoff

6. Turn ON the POWER switch of the CCD-D50/D50P. When the unit normally goes into the ROM WRITE mode, the TALLY/FAN ALARM indicator on the front panel blinks in orange.
7. Press Enter key on the PC to connect the PC to the CCU-D50/D50P, the current version will be displayed.


CCU-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/30
CCU-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
PLEASE DOWNLOAD LOAD module(CCUD50LD_Vxxxx.XHO).

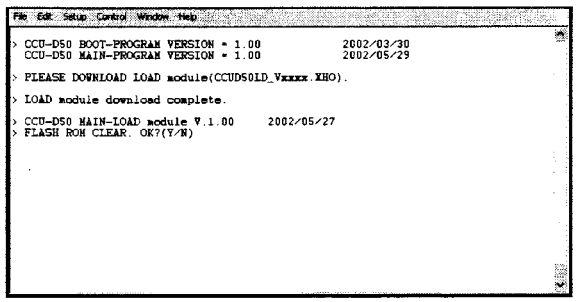
8. Download the LOAD module from PC to CCU-D50/D50P with text mode.
   File name: CCUD50LD_Vxxxx.xho



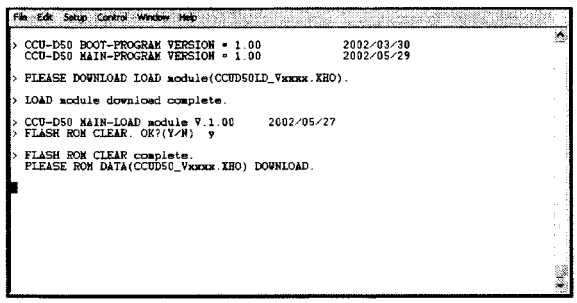


Click

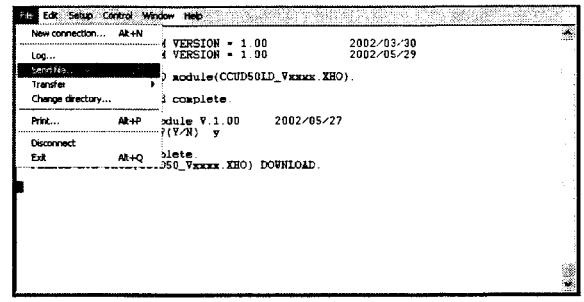
9. When the program runs after the LOAD module was downloaded, the "FLASH ROM CLEAR" message to check the deletion of the current ROM will be displayed.
   When updating, click "y", and when stopping, click "n", and press Enter key.

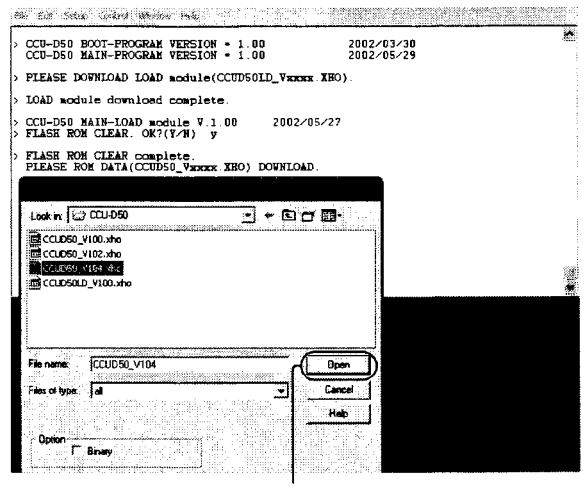

File Edit Setup Control Window Help
> CCU-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/30
CCU-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
> PLEASE DOWNLOAD LOAD module(CCUD50ID_Vxxxx.XHO).
> LOAD module download complete.
> CCU-D50 MAIN-LOAD module V.1.00 2002/05/27
> FLASH ROM CLEAR. OK?(Y/N)

10. When the deletion of the program ROM was finished, the message to urge the download of the program is displayed.


File Edit Setup Control Window Help
> CCU-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/30
CCU-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
> PLEASE DOWNLOAD LOAD module(CCUD50ID_Vxxxx.XHO).
> LOAD module download complete.
> CCU-D50 MAIN-LOAD module V.1.00 2002/05/27
> FLASH ROM CLEAR. OK?(Y/N) y
> FLASH ROM CLEAR complete.
PLEASE ROM DATA(CCUD50_Vxxxx.XHO) DOWNLOAD.

11. Download the ROM DATA from PC to CCU-D50/ D50P with text mode.
    File name: CCUD50_Vxxxx.xho



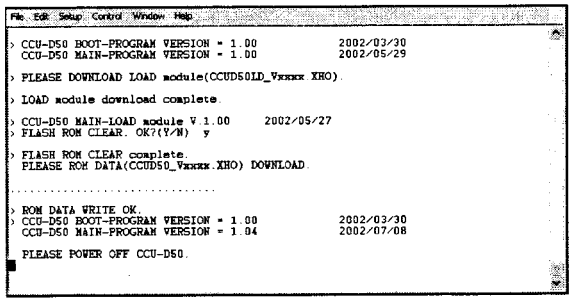


Click

12. When the downloading was completed, the version of the new ROM DATA is displayed.

Note

Be sure not to turn OFF the POWER till the downloading is finished.


File Edit Setup Control Window Help
CCU-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/30
CCU-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
PLEASE DOWNLOAD LOAD module(CCUD50LD_Vxxxx.XHO).
LOAD module download complete.
CCU-D50 MAIN-LOAD module V.1.00 2002/05/27
FLASH ROM CLEAR. OK?(Y/N) y
FLASH ROM CLEAR complete.
PLEASE ROM DATA(CCUD50_Vxxxx.XHO) DOWNLOAD.
ROM DATA WRITE OK.
CCU-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/30
CCU-D50 MAIN-PROGRAM VERSION = 1.04 2002/07/08
PLEASE POWER OFF CCU-D50.

13. Turn OFF the POWER switch of CCU-D50/D50P.
14. Set the switch S2001 (J-8) on the PR-270/270A board to RCP side, and disconnect the RS-232C interface cable.
15. Reinstall the top cover. (Refer to Section 1-6.)
16. Turn ON the POWER switch of CCU-D50/D50P, and set the setting data of the front panel and menu again. (Refer to the Operating Instructions.)

1-13. Circuit Protection Device

The PR-270/270A board is provided with positive thermistors for power line to protect circuits. This device limits a current by steeply increasing the inner resistance when the device rises to a certain temperature due to overcurrent or high ambient temperature. If the device is activates once, turn off the power and check an equipment concerned; camera control unit or other equipment connected to the REMOTE connector of the camera control unit. After the cause is eliminated and the device cools off, turn on the power again. If there is no trouble, the unit will operate normally. It takes about one minute for the device to cool off after powering off the unit.

PR-270/270A Board

Ref. No.	Address	Equipment protected
THP1	F8	Circuits in the camera control unit
THP2	D10	Equipment connected to REMOTE connector

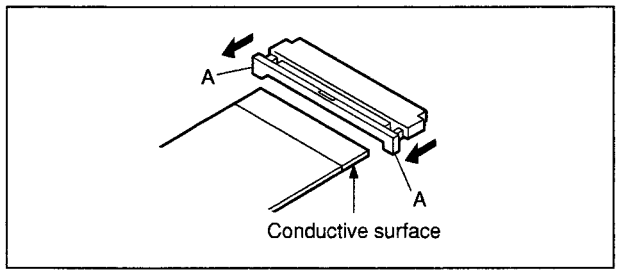
1-14. Description on Flexible Card Wire

1-14-1. Disconnecting/Connecting the Flexible Card Wire

The flexible card wires are used as follows:
Be careful not to bend these wires. This shortens the wire life.

Disconnecting

1. Turn OFF the POWER of this unit.
2. Slide portion A in the direction of the arrow and pull out the flexible card wire.



Connecting

Notes

- Be careful not to insert the flexible card wires obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

1. Slide portion A in the direction of the arrow and insert the flexible card wire as far as it will go into connector with the conductive surface of the wire put down.
2. Slide portion A in the opposite direction of the arrow and lock.

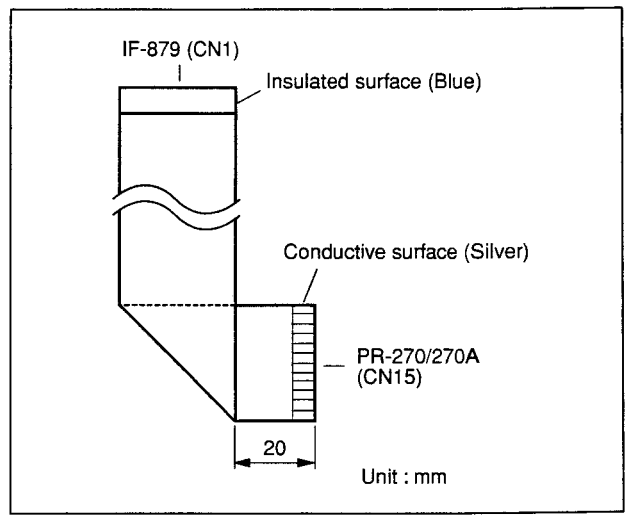
1-14-2. Forming Before Installation

If using a new flexible card wire, be sure to hand-form it as shown in the figure before installation.

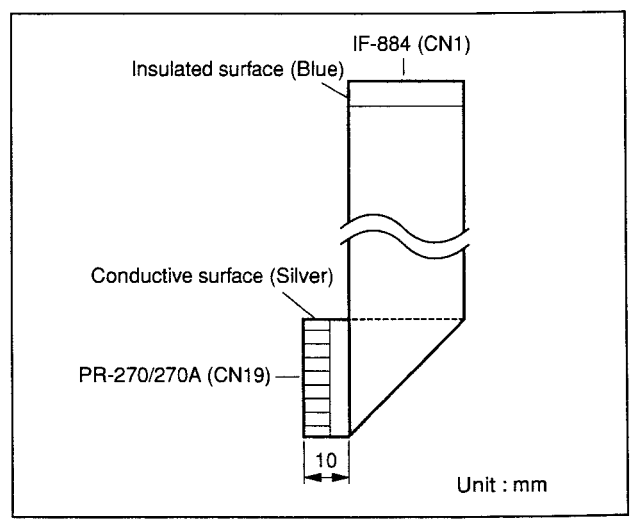
Note

Never fold it back after being formed once.

PR-270/270A board CN15 ↔ IF-879 board CN1



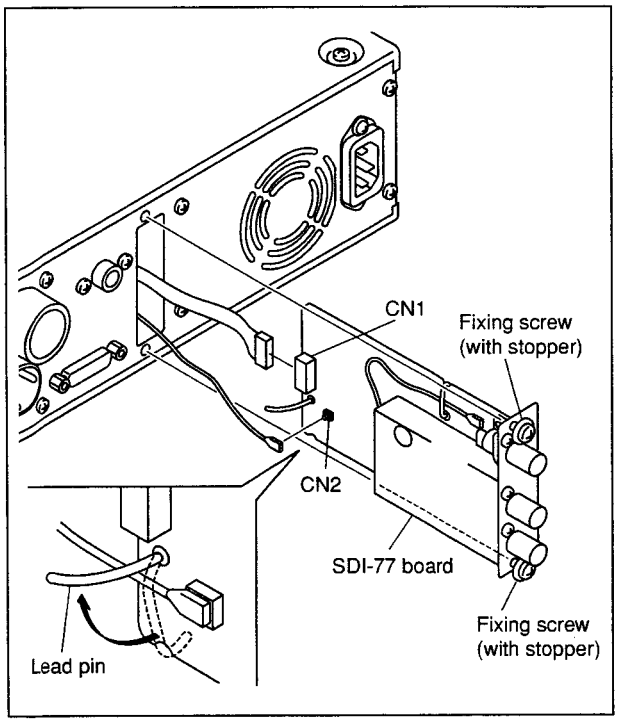
PR-270/270A board CN19 ↔ IF-884 board CN1



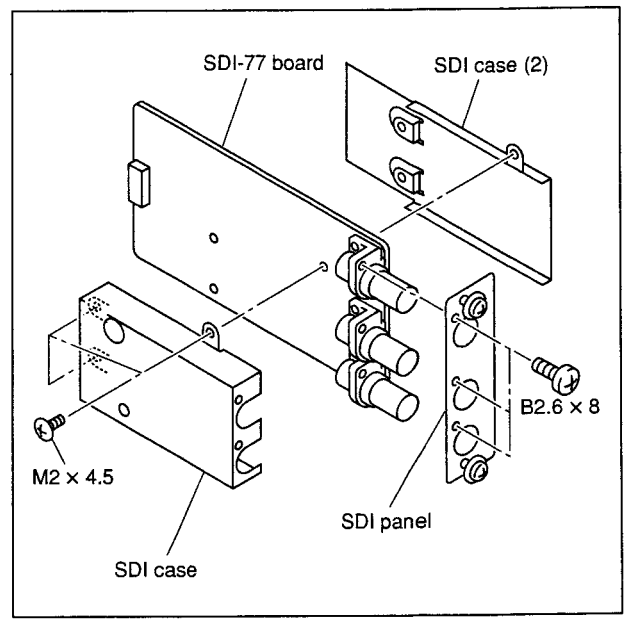
1-15. Removing and Reinstalling the Boards

1-15-1. SDI-77 Board

1. Loosen the two fixing screws with stopper, and pull out the SDI unit assembly.
2. Disconnect the harness from the connector CN1 on the SDI-77 board.
3. Lift up the lead pin as shown in the figure, and disconnect the coaxial cable from the connector CN2 on the SDI-77 board.



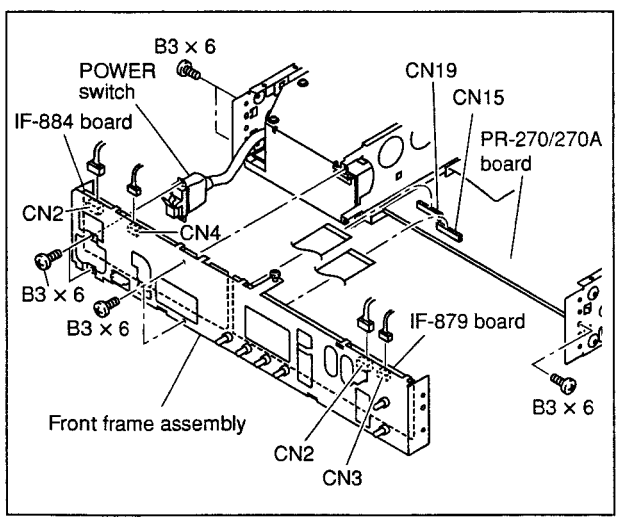
4. Remove the three screws, and remove the SDI panel.
5. Remove the three screws, and remove the SDI case and SDI case (2).



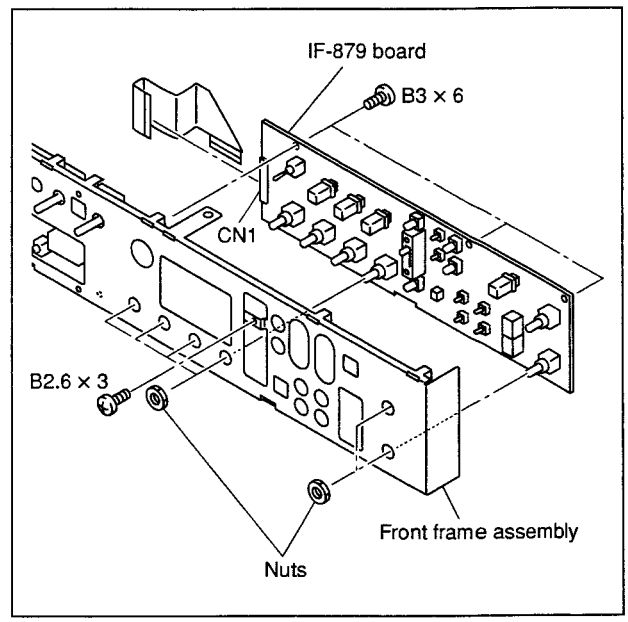
6. Reinstall the board in the reverse order of removal.

1-15-2. IF-879 Board

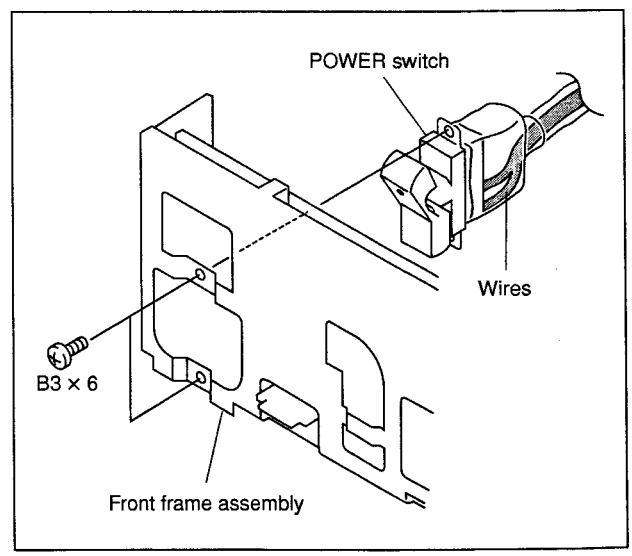
1. Remove the top cover and front panel. (Refer to Section 1-6.)
2. Disconnect the flexible card wires from the connectors CN15 and CN19 on the PR-270/270A board.
   Note
   Be careful not to bend the flexible card wires. This shortens the wire life.
3. Disconnect the harnesses from the connectors CN2 and CN3 on the IF-879 board.
4. Disconnect the harnesses from the connectors CN2 and CN4 on the IF-884 board.
5. Remove the two screws, and remove the POWER switch from the front frame assembly.
6. Remove the five screws, and pull out the front frame assembly.



7. Remove the four screws and six nuts, and remove the IF-879 board.
8. Disconnect the flexible card wire from the connector CN1 on the IF-879 board.
   Note
   Be careful not to bend the flexible card wires. This shortens the wire life.



9. Reinstall the board in the reverse order of removal.
   Note
   Reattach the POWER switch to the front frame assembly so that its wires point downward.

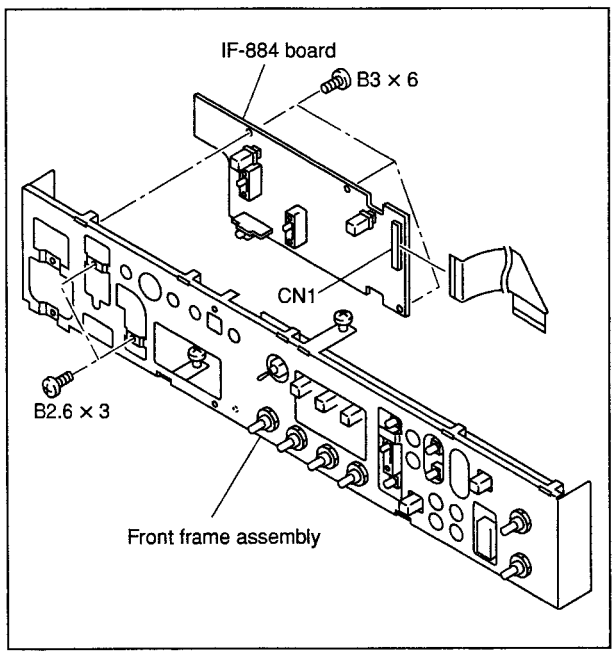


1-15-3. IF-884 Board

1. Pull out the front frame assembly. (Refer to steps 1 to 6 of Section 1-15-2.)
2. Remove the five screws, and remove the IF-884 board.
3. Disconnect the flexible card wire from the connector CN1 on the IF-884 board.

Note

Be careful not to bend the flexible card wires. This shortens the wire life.



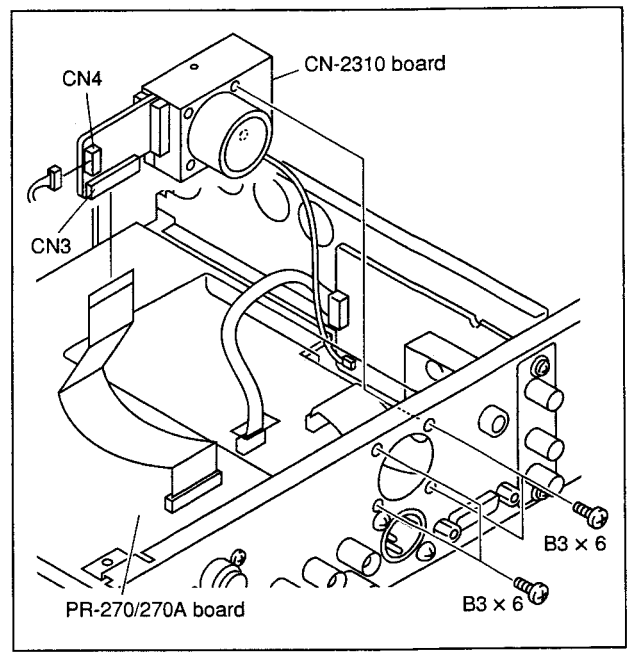
4. Reinstall the board in the reverse order of removal.

1-15-4. CN-2310 Board

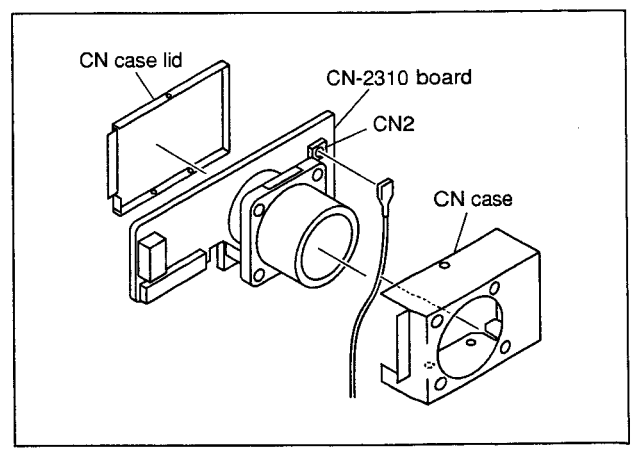
1. Remove the top cover. (Refer to Section 1-6.)
2. Remove the four screws, and remove the CN-2310 board.
3. Disconnect the flexible card wire from the connector CN3, and harness from the connector CN4 on the CN-2310 board.

Note

Be careful not to bend the flexible card wires. This shortens the wire life.



4. Remove the CN case and CN case lid as shown in the figure, and disconnect the coaxial cable from the connector CN2 on the CN-2310 board.



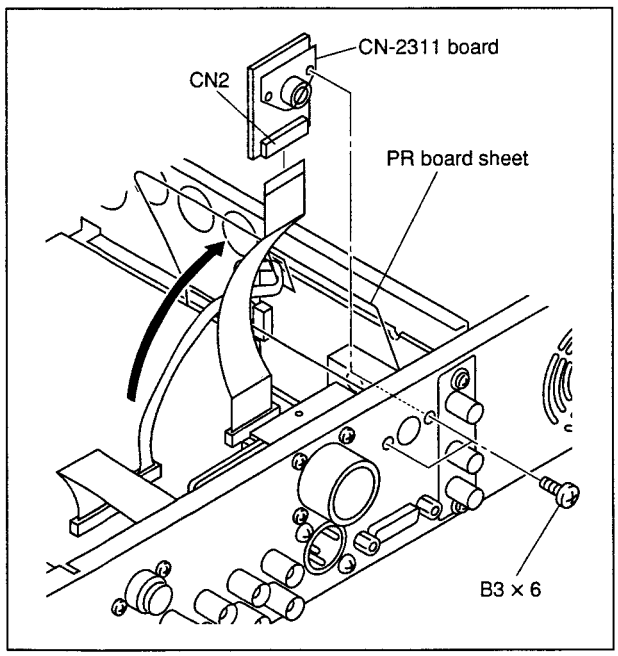
5. Reinstall the board in the reverse order of removal.

1-15-5. CN-2311 Board

1. Remove the top cover. (Refer to Section 1-6.)
2. Remove the two screws, and remove the CN-2311 board.
3. Lift up the PR board sheet, and disconnect the flexible card wire from the connector CN2 on the CN-2311 board.

   Note

   Be careful not to bend the flexible card wires. This shortens the wire life.



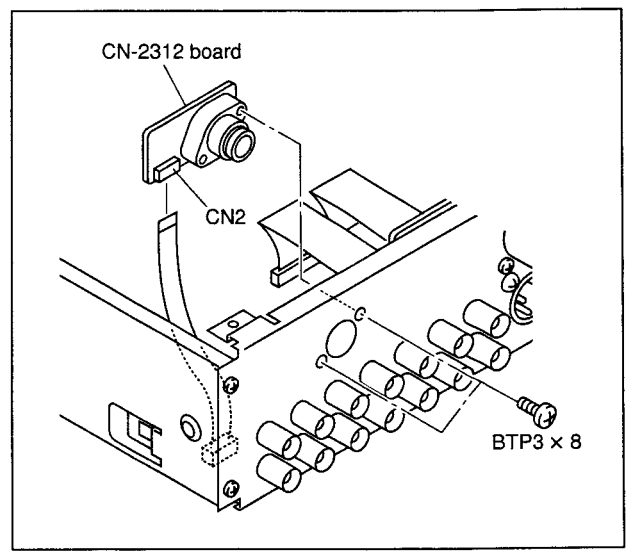
4. Reinstall the board in the reverse order of removal.

1-15-6. CN-2312 Board

1. Remove the top cover. (Refer to Section 1-6.)
2. Remove the two screws, and remove the CN-2312 board.
3. Disconnect the flexible card wire from the connector CN2 on the CN-2312 board.

   Note

   Be careful not to bend the flexible card wires. This shortens the wire life.



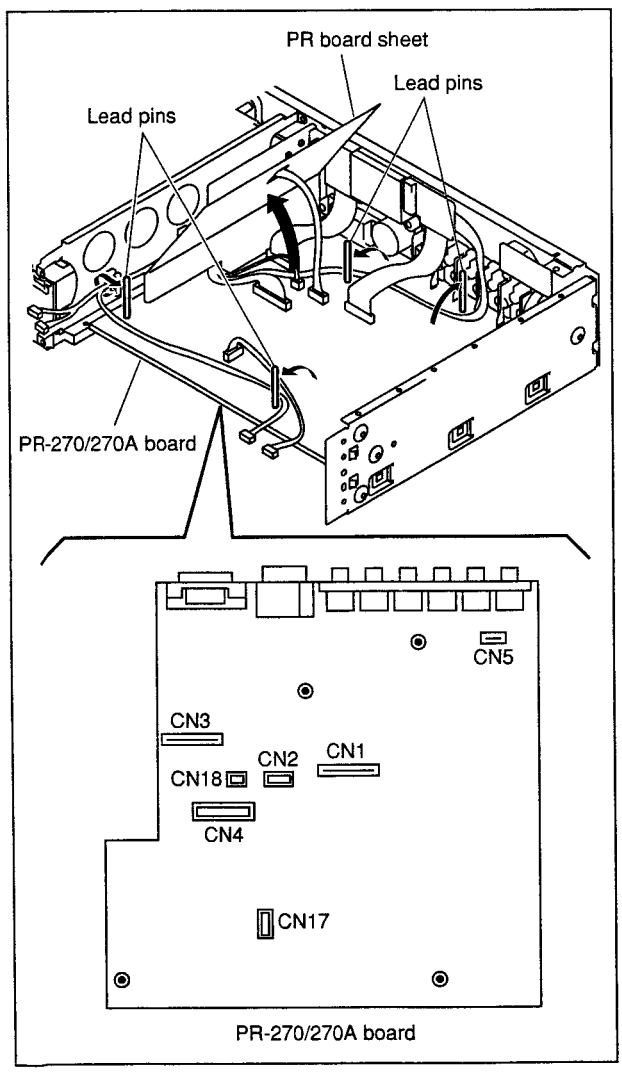
4. Reinstall the board in the reverse order of removal.

1-15-7. PR-270/270A Board

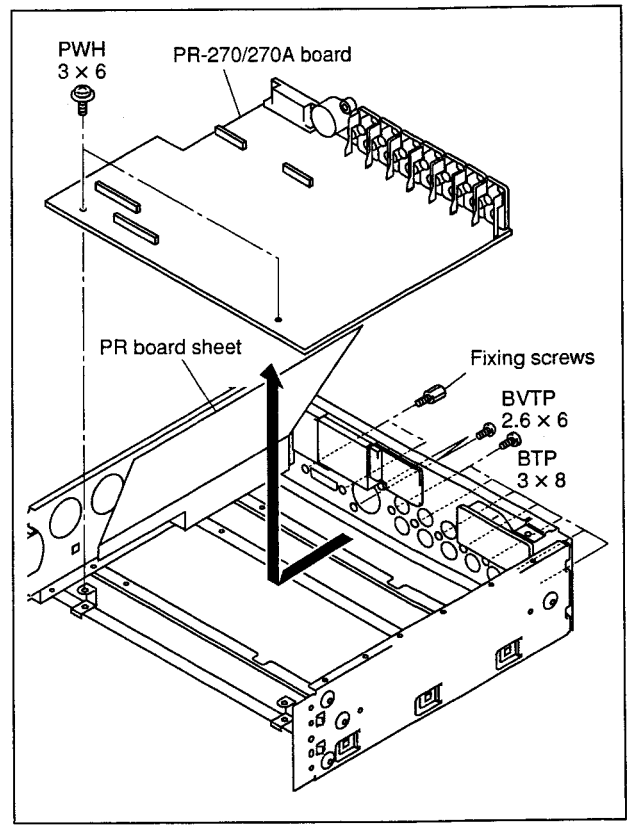
1. Pull out the front frame assembly. (Refer to steps 1 to 6 of Section 1-15-2.)
2. Lift up the four lead pins on the PR-270/270A board to unfasten of the harnesses as shown in the figure.
3. Lift up the PR board sheet, and disconnect the flexible card wires from the connectors CN1, CN3 and CN5, and the harness from the connectors CN2, CN4, CN17 and CN18 on the PR-270/270A board,

Note

Be careful not to bend the flexible card wires. This shortens the wire life.



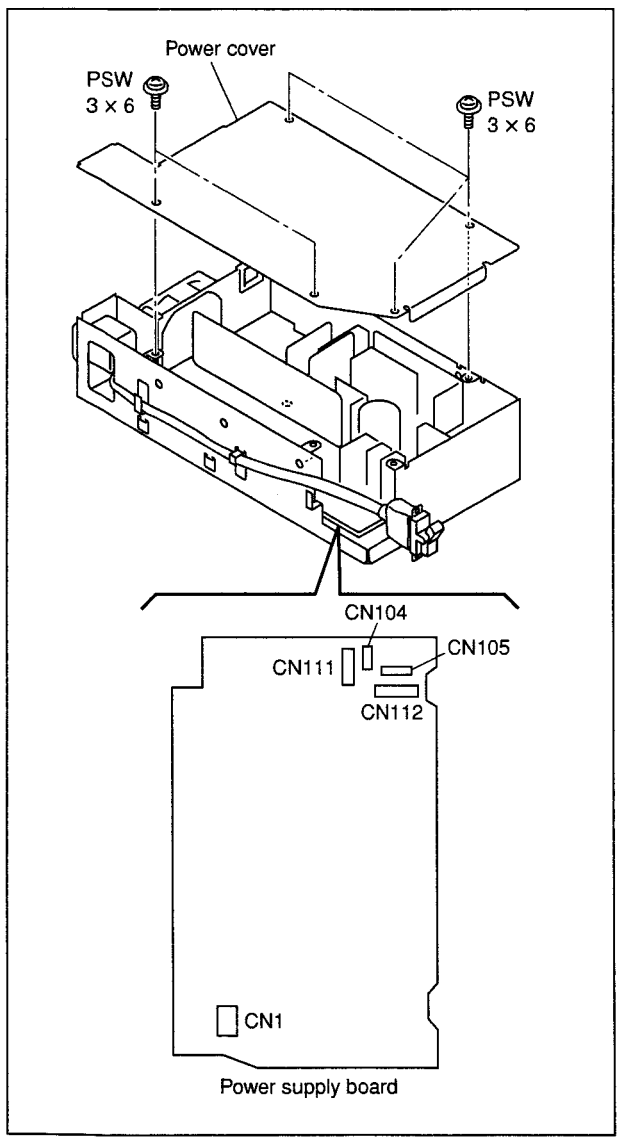
4. Remove the eleven screws and two fixing screws. Remove the PR-270/270A board in the arrow direction while lifting up the PR board sheet.



5. Reinstall the board in the reverse order of removal.

1-15-8. Power Supply Board

1. Remove the switching regulator.
   (Refer to Section 1-7.)
2. Remove the five screws, and remove the power cover.
3. Disconnect the harnesses from the connectors CN1, CN104, CN105, CN111 and CN112 on the power supply board.

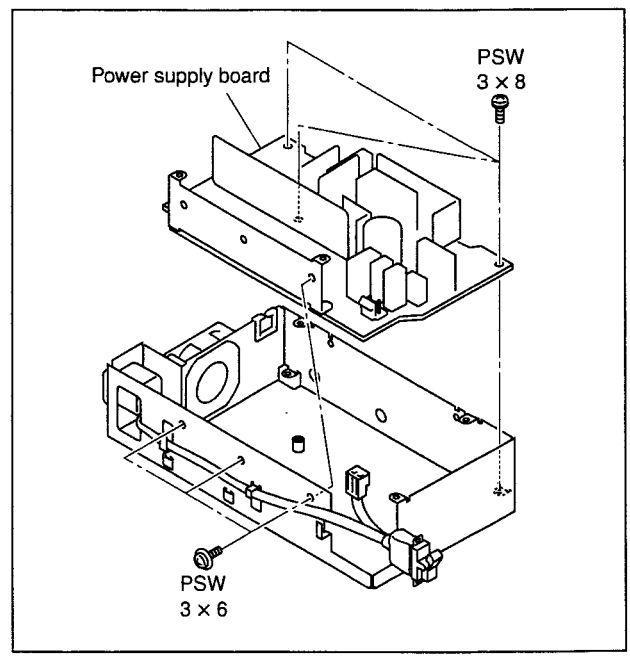


4. Remove the six screws, and remove the power supply board.
5. Reinstall the board in the reverse order of removal.

Note

Be sure to tighten the screws shown in the following figure in an upright position with the standard tightening torque.

Standard tightening torque
PSW3 × 6: 80×10^{-2} N•m (8 kgf•cm)
PSW3 × 8: 80×10^{-2} N•m (8 kgf•cm)

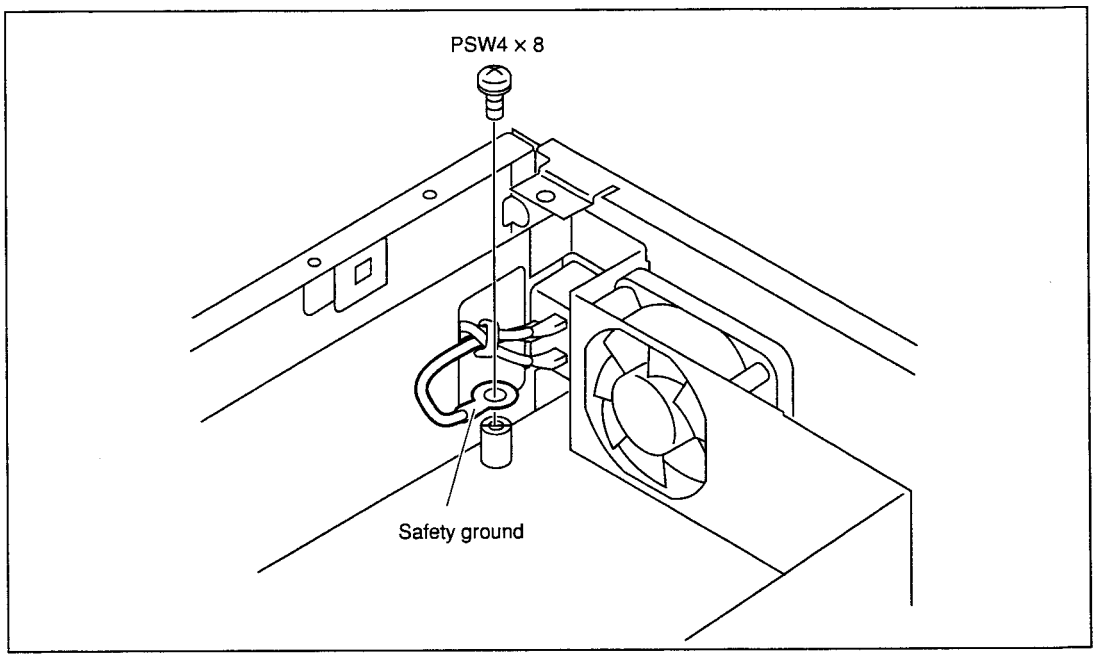


1-16. Notes on Service of Power Supply (Switching Regulator)

1-16-1. Note on Tightening Screw of Ground Terminal

Be sure to tighten the screw which fixing the ground terminal to the chassis with the specified tightening torque.

Tightening torque
PSW4 × 8: $140 \times 10^{-2} \pm 20 \times 10^{-2}$ N•m (14 ±2 kgf•cm)



1-16-2. Note on Replacement of Part on the Power Supply Board

WARNING

The power supply of this unit is critical part for safe operation.
Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

This section describes the notices when exchanging the parts mounted on the power supply board.
When replacing the parts, be sure to perform the operation with extremely care according to the followings.

Note

Be sure to perform the insulation test after the part was replaced.

Tightening screw

Use the removed screw when reinstalling, and tighten it with the standard tightening torque. If the removed screw is lost, be sure to use the screw of the same type and the same size.

Standard tightening torque
M3 screw: 80×10^{-2} N•m (8 kgf•cm)

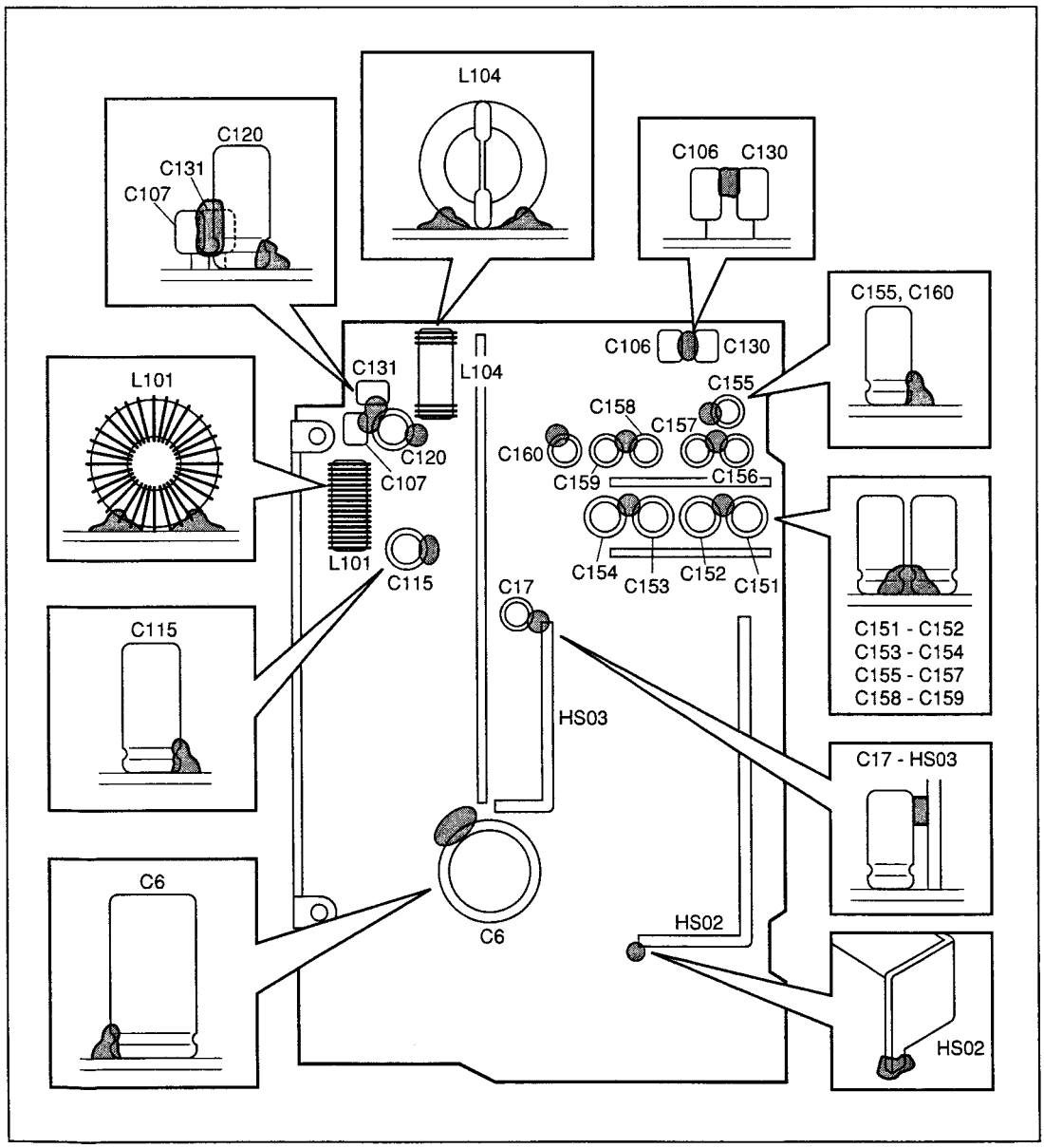
Fixing with Adhesive Compound

The parts shown in the figure below are fixed with an adhesive bond.
When replacing the parts shown in the figure below, be sure to fix them to the original position with a specified adhesive bond.

Notes

- When a part has being fixed with an adhesive bond between parts, apply the adhesive bond between parts as well, and when a part has being fixed between the part and board, apply it between the part and board.
- Apply sufficient quantity of an adhesive bond so that the parts does not move even if the parts are pushed with a finger.

Sony bond SC608LVZ: Sony part No. 7-432-912-52



Note on Lead Wire and Tube

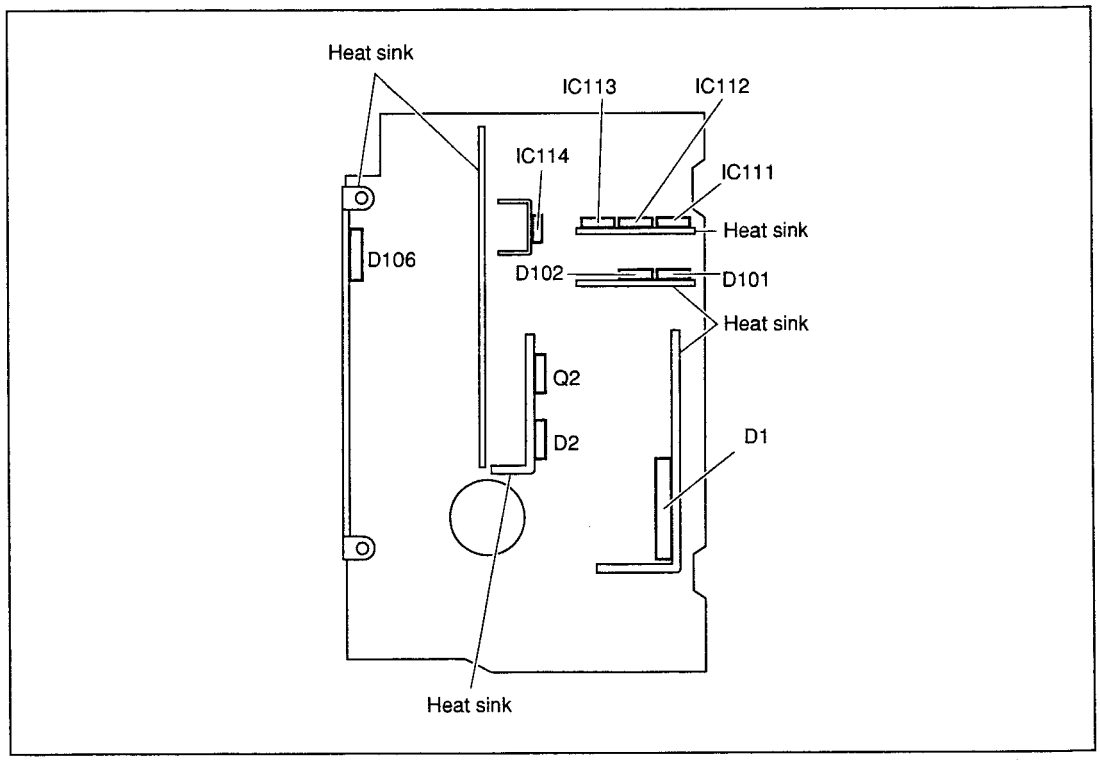
If the lead wire and/or vinyl tube is damaged during the parts replacement, be sure to replace with a new one.

Silicon Grease for Heat Radiation

The silicon grease for heat radiation has been applied between the part and heat sink shown in the figure below.

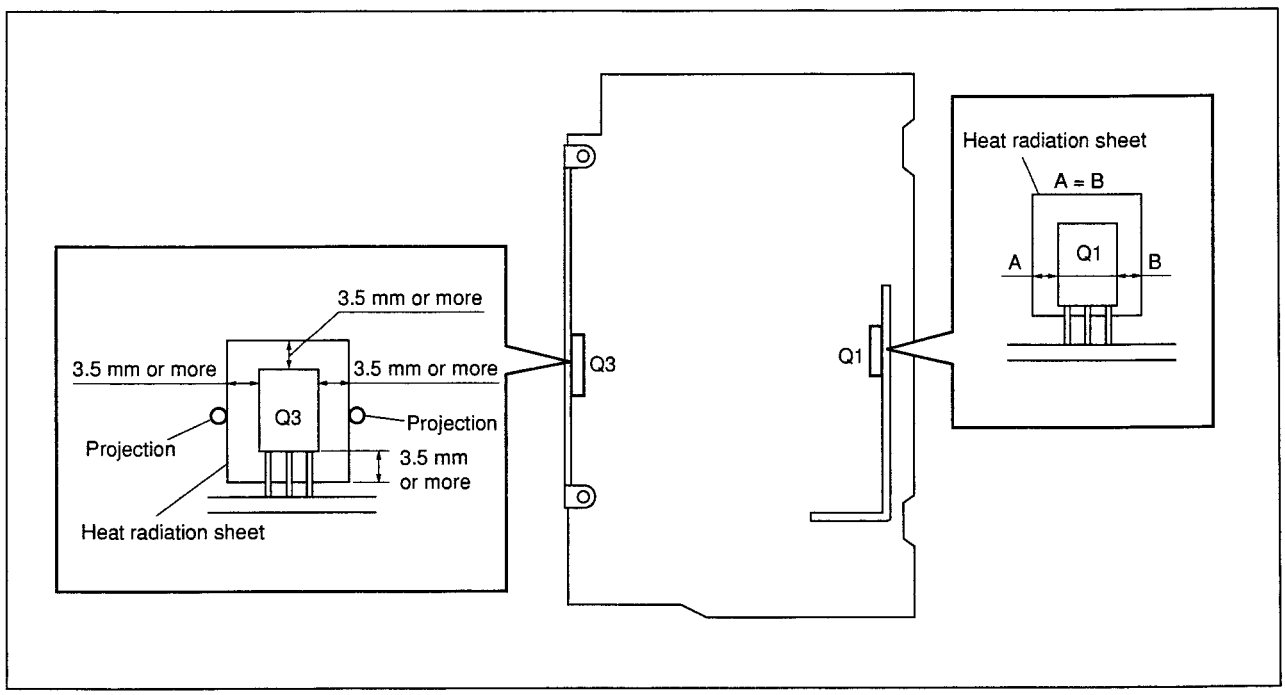
When replacing any of them, be sure to apply a thin film of silicon grease for heat radiation in advance.

Silicon grease for heat radiation KS-650N: Sony part No. 7-662-003-09



Heat Radiation Sheet

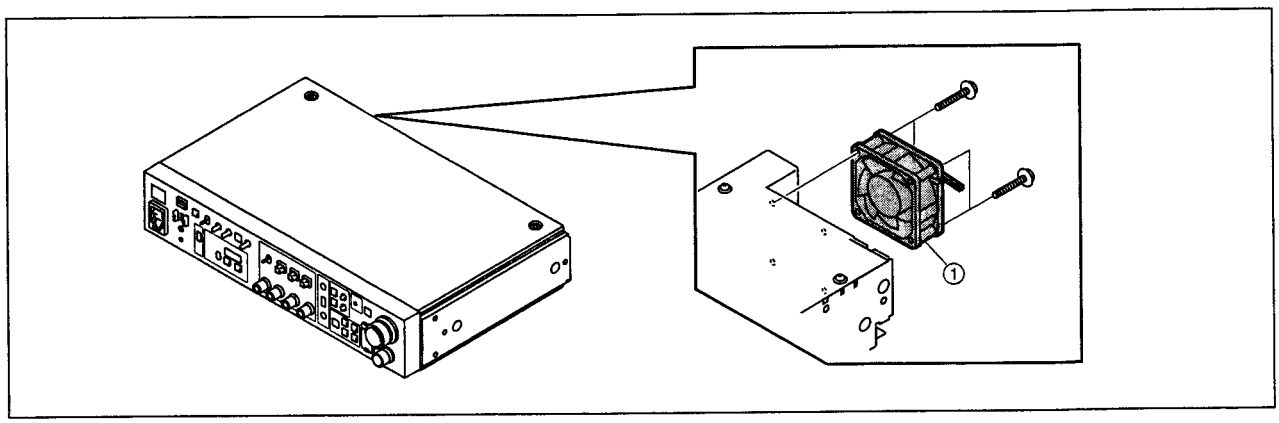
The heat radiation sheets are used to the transistors Q1 and Q3 on the power supply board.
When reinstalling the transistors Q1 and Q3 on the power supply board, check the position of the transistor and heat radiation sheet meets the specification shown in the figure below.



1-17. Recommended Replacement Part

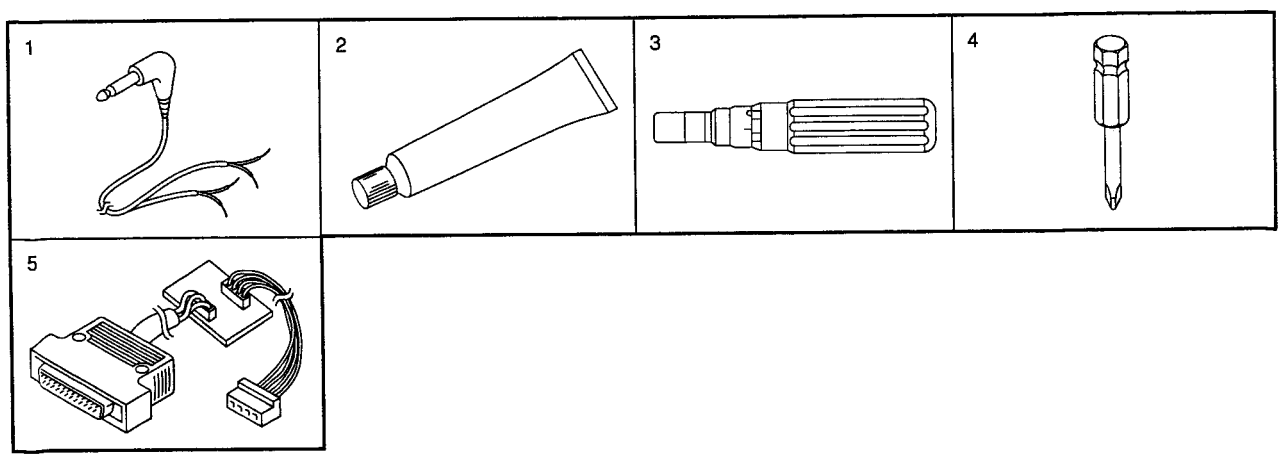
The recommended replacement fan should be used in the switching regulator of this unit.
The lifespan of these fans is about 30,000 hours, which means that the fans can be used for about three and a half years if the power is on all the time, so the fans should be replaced according to service conditons.

No.	Description	Sony P/N
1	FAN	9-885-002-54 or 9-885-002-55



1-18. Fixtures

Fig. No.	Part No.	Description	Purpose
1	1-557-039-00	Cord with plug	To SIDE TONE adjustment
2	7-432-912-52	Sony bond SC608LVZ	To fix the parts on the power supply board
	7-662-003-09	Silicon grease KS-650Z	To heat radiate the parts on the power supply board
3	J-6252-520-A	Torque screwdriver (12 kg)	To tighten screw
	J-6252-530-A	Torque screwdriver (26 kg)	
4	J-6323-430-A	Torque screwdriver bit (M3)	
5	J-6510-120-A	RS-232C interface cable (9P)	To update ROM program



Section 2
Electrical Alignment

2-1. Preparation

2-1-1. Equipment Required

Use the measuring instrument and test signal suitable for the TV system (NTSC or PAL) of the camera system to adjust.

- Waveform monitor
  Tektronix 1780 (for NTSC)/1781 (for PAL) or equivalent
- Oscilloscope (band: 100 MHz or more)
  Tektronix 2465 or equivalent
- Audio signal generator (1 kHz, sine wave)
- Frequency counter (27.00 MHz, 1 V p-p can be measured.)
  Advantest TR5821 or equivalent
- Video signal generator (Signal: 10 step signal with sync)
  Tektronix 1410 (for NTSC)/1411 (for PAL) or equivalent
- Distributor
- Color monitor (Sony PVM-1320 equivalent)
  Sony PVM-1320 (for NTSC)/PVM-1320P (for PAL) or equivalent
- Camera cable CCZ-A100 (100 m) × 1
- Coaxial cables (with BNC connectors, 3 m or less) × 2
  BELDEN 1694A or Bryant Broadcast LVC500 or equivalent
- Cord with plug (Sony part No. : 1-557-039-00) × 1

2-1-2. List of Adjustment Controls

Board	Potentiometer	Adjustment	Item
PR-270/270A	RV1	RETURN/PROMPTER VIDEO LEVEL	2-4-1
	RV7	GENLOCK/RETURN VIDEO LEVEL	2-4-2
	RV8	GATE PULSE PHASE	2-4-5
	RV9	GATE PULSE WIDTH	2-4-6
	RV10	GENLOCK, SYNC LEVEL	2-4-3
	RV11	SYNC CLIP	2-4-4
	RV201	VBS VIDEO LEVEL	2-2
	RV401	R VIDEO LEVEL	2-3
	RV601	B VIDEO LEVEL	2-3
	RV801	G VIDEO LEVEL	2-3
	RV1001	SIDE TONE	2-6
IF-879	RV3	SDI/VBS	2-4-7
SDI-77	RV1	FREQ. ADJ	2-5

2-1-3. Notes on Adjustment

- All measuring equipment should be calibrated.
- Before adjustment, warm up the unit and measuring equipment for about 10 minutes.
- Be sure to turn off the power before disconnecting/connecting the camera cable.

2-1-4. Initial Settings

If the switch settings of the customer setting positions are changed, it is recommend to write down the customer setting positions to the following table.
When the adjustments are finished, be sure to set the switches to the customer setting positions.

Notes

- Before beginning initial settings for the PR-270/270A board, remove the top cover of this unit. (Refer to Section 1-6.)
- Be sure to turn off the power before performing settings of the system setting switches and intercom setting switches on the front panel.

Switches on the board

Board	Switch	Initial Setting	Customer Setting position
PR-270/270A	S1	R_ch	
	S2	G_ch	
	S2001	RCP	
	S2002-1	OFF	
	S2002-2	OFF	
	S2002-3	OFF	
	S2002-4	OFF	

Front Panel

Switches/Buttons		Initial Setting	Customer Setting position
System Setting Switches	1	OFF	
	2	OFF	
	3	OFF	
	4	OFF	
	5	OFF	
	6	OFF	
Intercom Setting Switches	1	OFF	
	2	OFF	
	3	OFF	
	4	OFF	
CABLE COMP SELECT buttons		L100 (100 m)	

2-1-5. Making Signal Input Tools

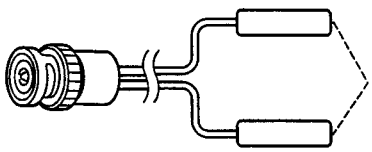
For CCU-D50/D50P adjustment, prepare a signal input tool to the camera cable.
Make the two signal input tools proceeding as follows.

Preparation

- BNC connectors × 2 (Sony Part No. 1-569-370-12)
- Lead wires × 4 (Use lead wires of different color to distinguish the signal line from the GND line.)
- Pins (Male) × 4 (pins which can be inserted into each socket of the camera cable (Female).)

Making tools

Make two tools as shown in the figure.



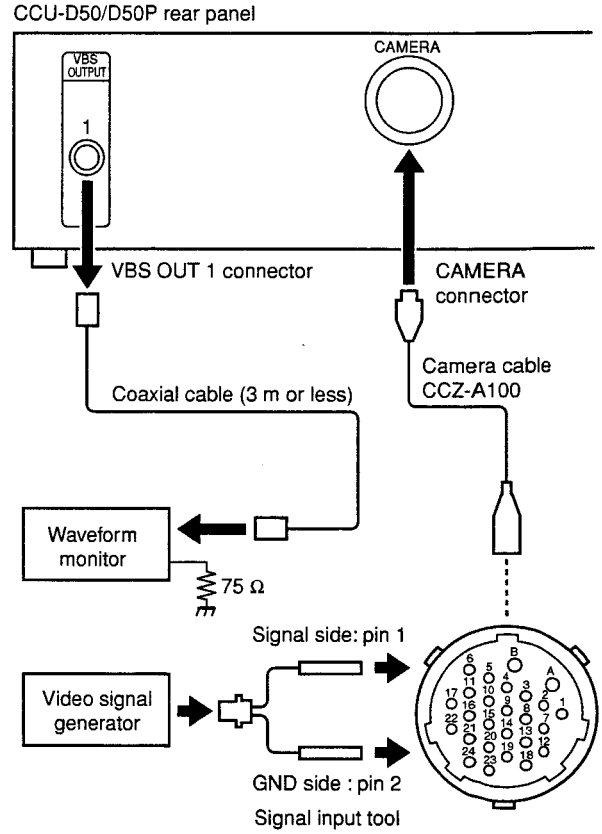
Pins (Male) :
Any type that can be inserted into each socket of the camera cable (Female).

2-2. VBS Video Level Adjustment

Equipment : Waveform monitor
Video signal generator (10 step signal with sync)
Camera cable CCZ-A100 (100 m)
Signal input tool
Coaxial cable (with BNC connectors, 3 m or less)

Connection

CCU-D50/D50P rear panel

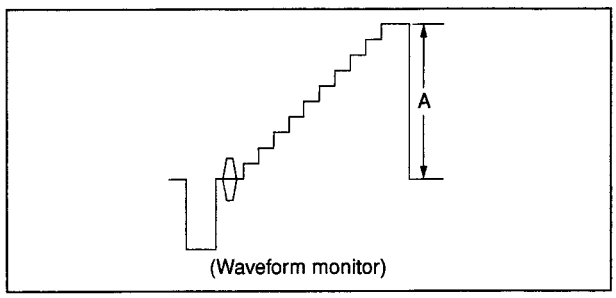


Preparations

CABLE COMP FINE screws (on the front panel) → Mechanical center

Adjustment Procedures

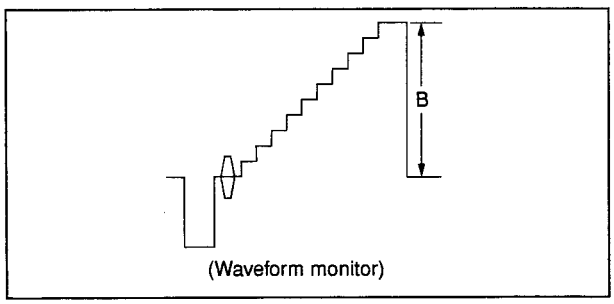
1. Measure the output signal level "A" of the video signal generator and write down it.

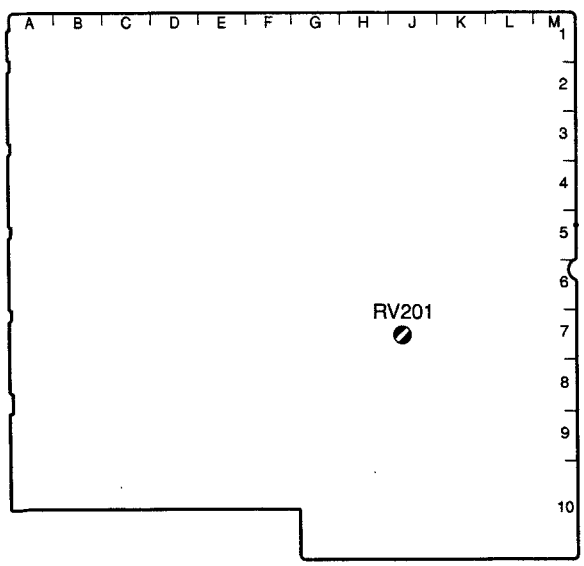


2. Connect the unit and equipment as shown in the connection diagram and input the video signal to the connector of the camera cable.

   Video signal input pin No. (Signal input tool)
   Signal side : pin 1/Camera cable
   GND side : pin 2/Camera cable

3. Test Point : VBS OUTPUT 1 connector (on the rear panel)
   Adjustment Point : ⊘RV201/PR-270/270A board
   Specifications : B = A ±2 %



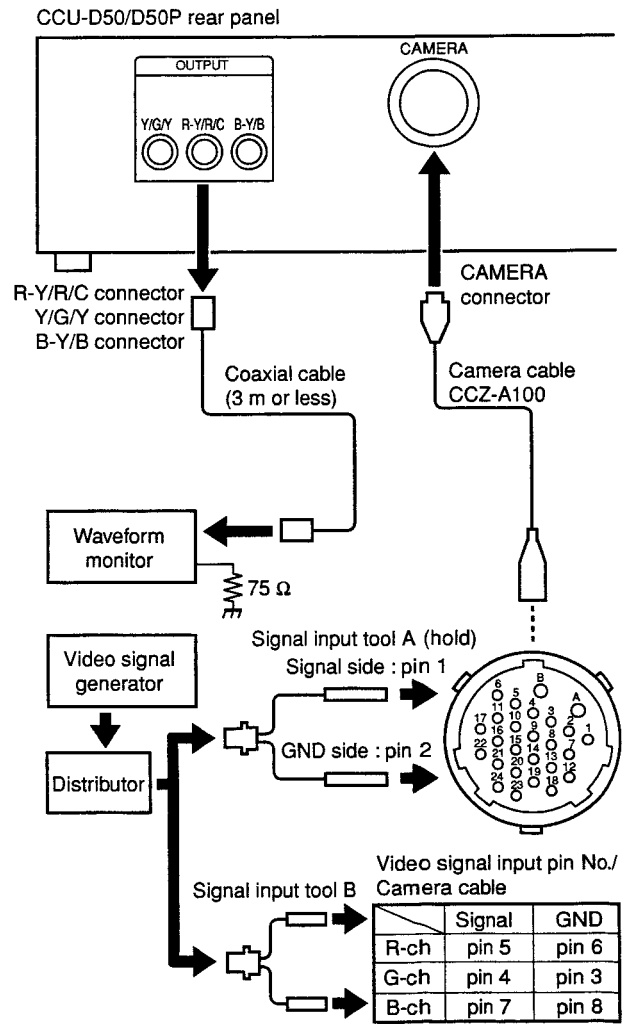


PR-270/270A BOARD (A SIDE)

2-3. RGB Video Level Adjustment

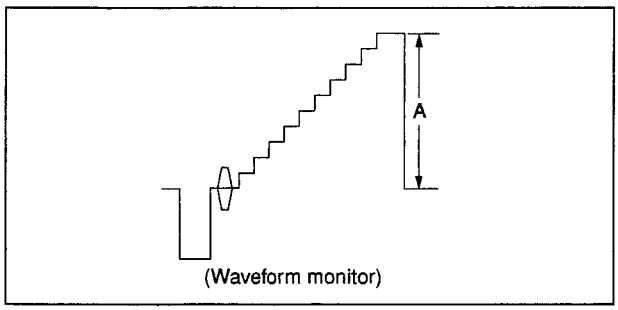
Equipment : Waveform monitor
Video signal generator (10 step signal with sync)
Distributor
Camera cable CCZ-A100 (100 m)
Signal input tool (2 pieces)
Coaxial cable (with BNC connectors, 3 m or less)

Connection



Adjustment Procedures

1. Measure the output signal level "A" of the video signal generator and write down it.



2. Connect the unit and equipment as shown in the connection diagram and input the video signal to the connector of the camera cable.

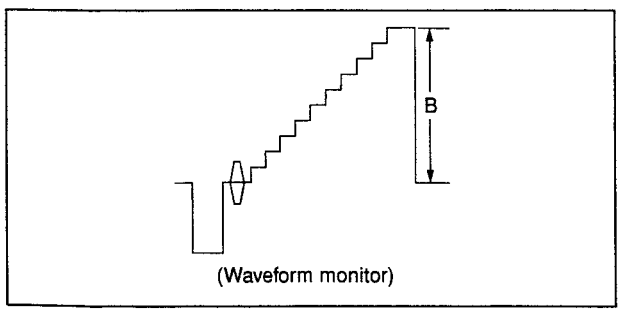
   Video signal input pin No. (Signal input tool A)
   Signal side : pin 1/Camera cable
   GND side : pin 2/Camera cable

   Keep inputting the video signal from the signal input tool A to the camera connector during the following procedures 3 to 5.

3. R-ch Video Level Adjustment

   Video signal input pin No. (Signal input tool B)
   Signal side : pin 5/Camera cable
   GND side : pin 6/Camera cable

   Test Point : R-Y/R/C connector (on the rear panel)
   Adjustment Point : ⊘RV401/PR-270/270A board
   Specifications : B = A ±2 %



4. G-ch Video Level Adjustment

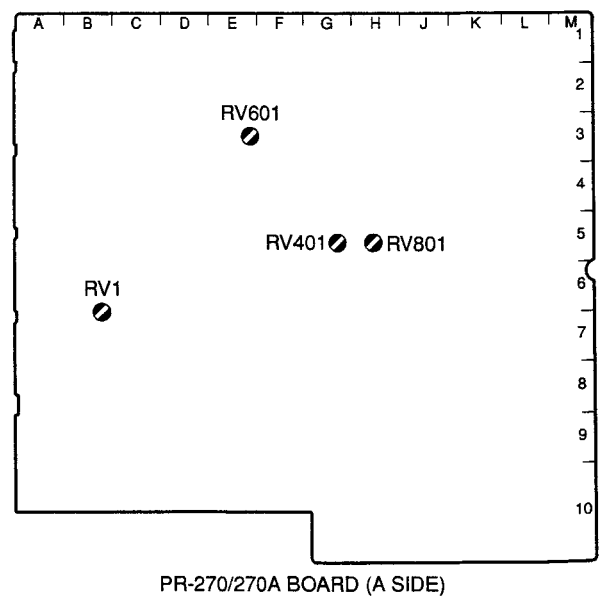
   Video signal input pin No. (Signal input tool B)
   Signal side : pin 4/Camera cable
   GND side : pin 3/Camera cable

   Test Point : Y/G/Y connector (on the rear panel)
   Adjustment Point : ⊘RV801/PR-270/270A board
   Specifications : B = A ±2 %

5. B-ch Video Level Adjustment

   Video signal input pin No. (Signal input tool B)
   Signal side : pin 7/Camera cable
   GND side : pin 8/Camera cable

   Test Point : B-Y/B connector (on the rear panel)
   Adjustment Point : ⊘RV601/PR-270/270A board
   Specifications : B = A ±2 %



PR-270/270A BOARD (A SIDE)

2-4. GENLOCK, Return System Adjustment

Note

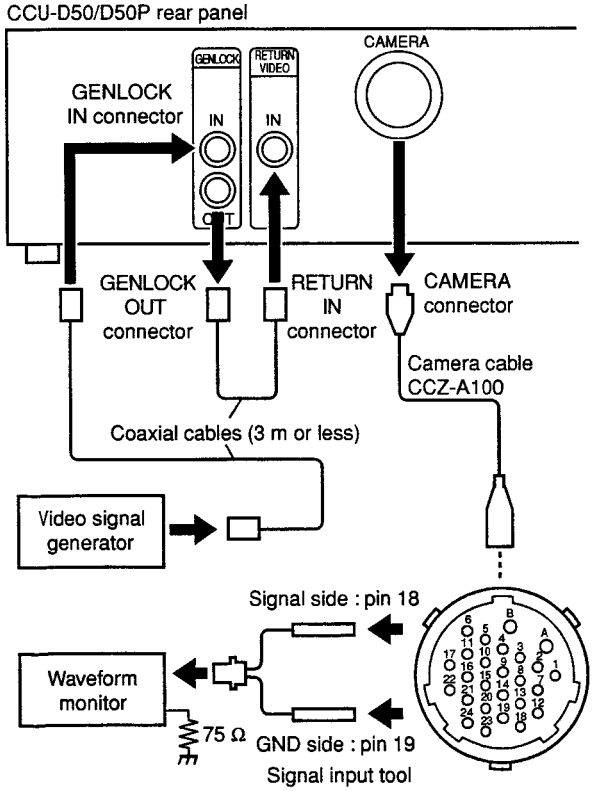
Perform the adjustments from Section 2-4-1 to 2-4-4 continuously.

2-4-1. Return Video Level Adjustment

Equipment : Waveform monitor
Video signal generator (10 step signal with sync)
Camera cable CCZ-A100 (100 m)
Signal input tool
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

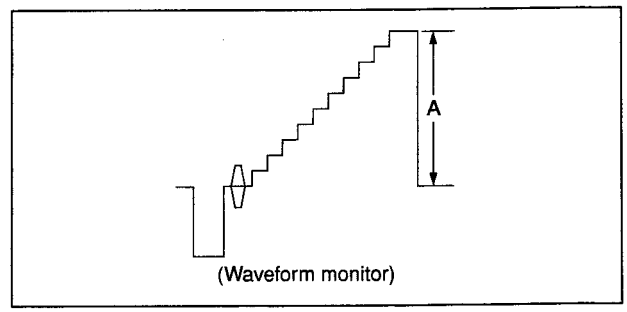
Connection

CCU-D50/D50P rear panel

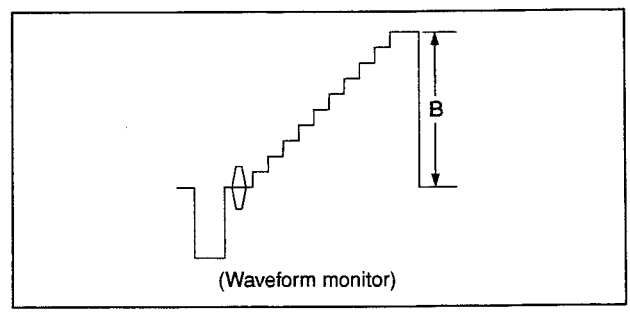


Adjustment Procedures

1. Measure the output signal level "A" of the video signal generator and write down it.



2. Connect the unit and equipment as shown in the connection diagram and input the video signal to the GENLOCK IN connector.
3. Test Point : Signal side : pin 18/Camera cable
GND side : pin 19/Camera cable
Adjustment Point : ⊘RV1/PR-270/270A board
Specifications : B = A ±2 %

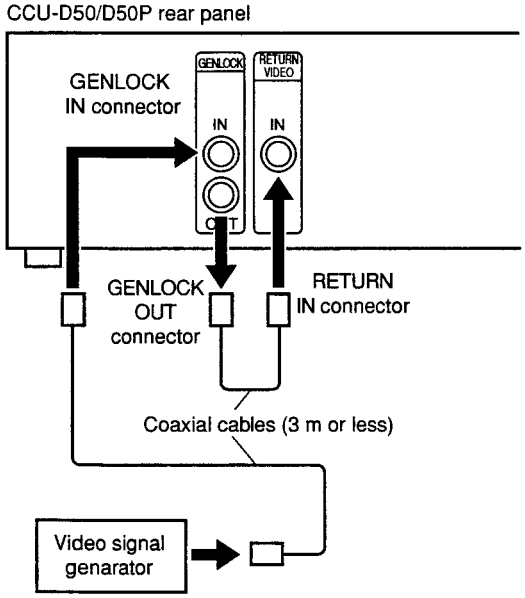


2-4-2. GENLOCK/Return Video Level Adjustment

Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

Connection

CCU-D50/D50P rear panel



Preparations

- System setting switch 2 (on the front panel) → ON

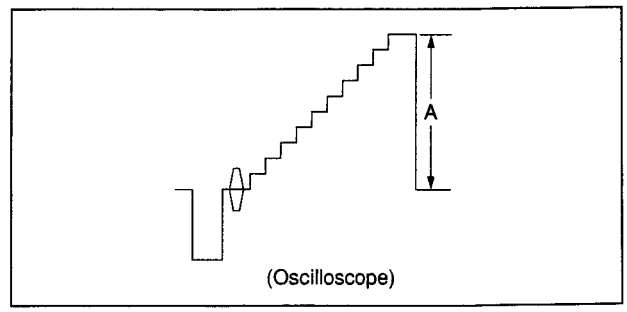
Note

Be sure to turn off the power before setting the switch.

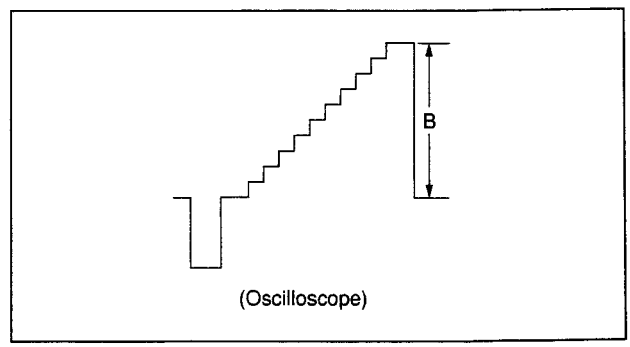
- ⊘RV11/PR-270/270A board → fully clockwise (↻)

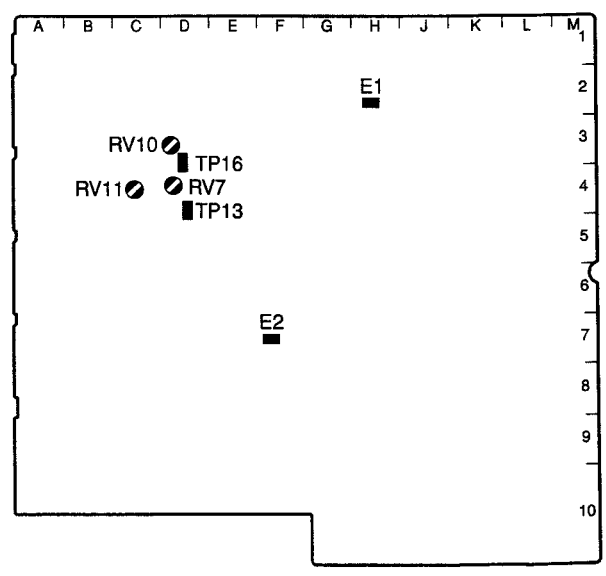
Adjustment Procedures

1. Measure the output signal level "A" of the video signal generator and write down it.



2. Connect the unit and equipment as shown in the connection diagram.
3. Test Point : TP13 (GND : E2)/PR-270/270A board
   Adjustment Point : ⊘RV7/PR-270/270A board
   Specifications : B = 1.6 × A ±2 %





PR-270/270A BOARD (A SIDE)

2-4-3. GENLOCK, SYNC Level Adjustment

Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

Connection

Refer to Section 2-4-2.

Preparations

- System setting switch 2 (on the front panel) → ON

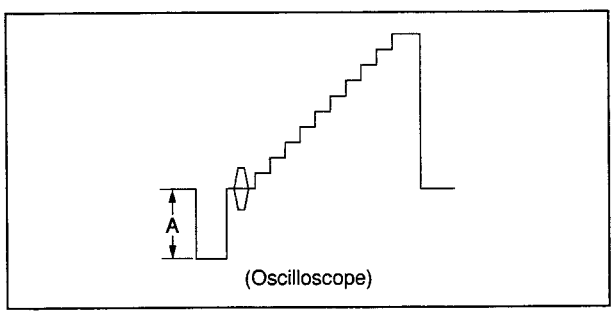
Note

Be sure to turn off the power before setting the switch.

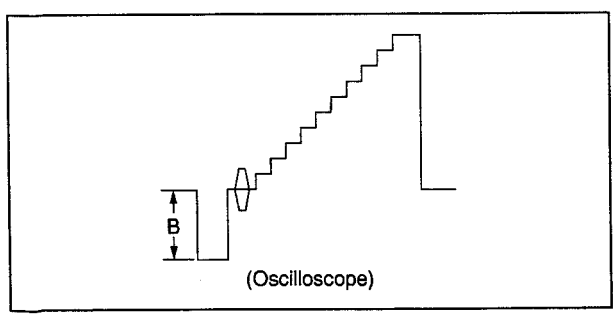
- ⊘RV11/PR-270/270A board → fully clockwise (↻)

Adjustment Procedures

1. Measure the output signal level "A" of the video signal generator and write down it.



2. Connect the unit and equipment as shown in the connection diagram in Section 2-4-2.
3. Test Point : TP16 (GND : E2)/PR-270/270A board
   Adjustment Point : ⊘RV10/PR-270/270A board
   Specifications : B = 1.65 × A ±2%



2-4-4. SYNC CLIP Adjustment

Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

Connection

Refer to Section 2-4-2.

Preparations

- System setting switch 2 (on the front panel) → ON

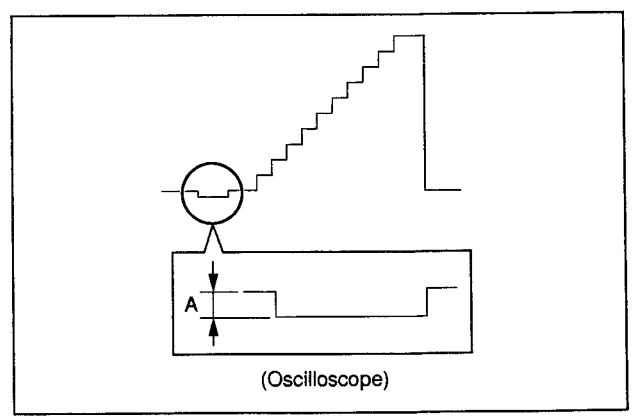
Note

Be sure to turn off the power before setting the switch.

- ⊘RV11/PR-270/270A board → fully clockwise (↻)

Adjustment Procedures

1. Connect the unit and equipment as shown in the connection diagram in Section 2-4-2.
2. Test Point : TP13 (GND : E1)/PR-270/270A board
   Trigger : HD (TP16/PR-270/270A board)
   Adjustment Point : ⊘RV11/PR-270/270A board
   Specifications : A = 60 ±20 mV



Setting after Adjustment

Turn off the power and return the system setting switch 2 (on the front panel) to OFF.

2-4-5. Gate Pulse Phase Adjustment

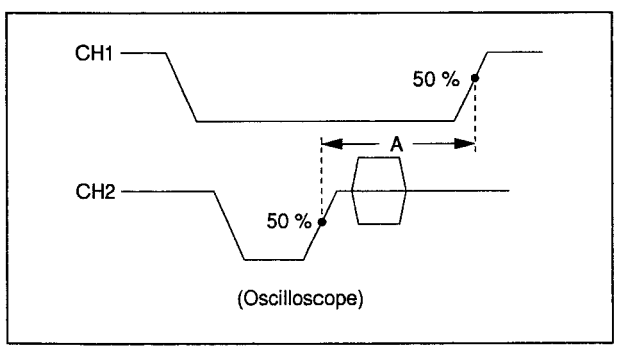
Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

Connection

Refer to Section 2-4-2.

Adjustment Procedures

1. Connect the unit and equipment as shown in the connection diagram in Section 2-4-2.
2. Test Point : CH1 : TP8 (GND : E2)/PR-270/270A board
   CH2 : TP16 (GND : E1)/PR-270/270A board
   Trigger : HD (TP16/PR-270/270A board)
   Adjustment Point : ⊘RV8/PR-270/270A board
   Specifications : A = 3.8 ±0.1 µs



2-4-6. Gate Pulse Width Adjustment

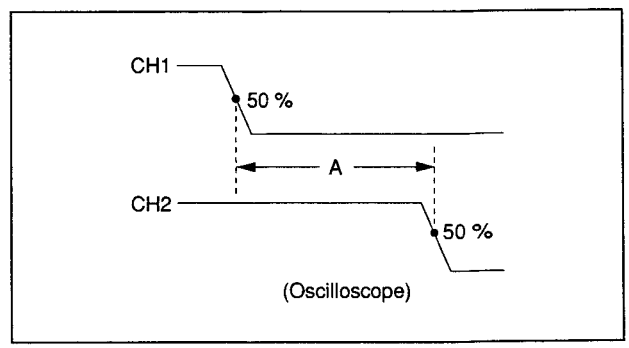
Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Coaxial cables (with BNC connectors, 3 m or less): 2 pieces

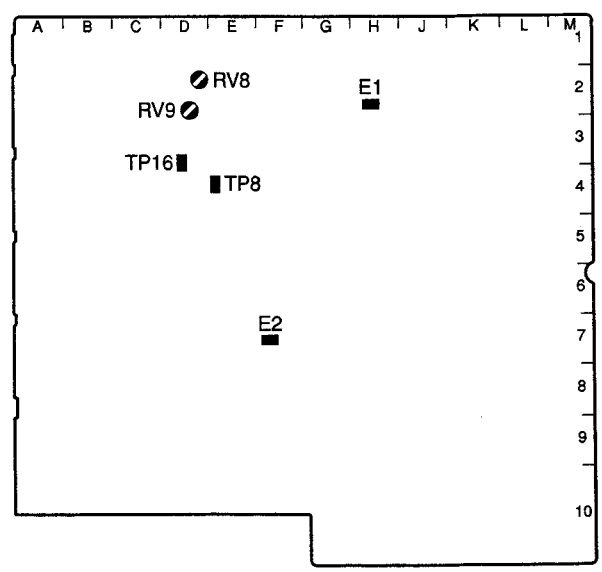
Connection

Refer to Section 2-4-2.

Adjustment Procedures

1. Connect the unit and equipment as shown in the connection diagram in Section 2-4-2.
2. Test Point : CH1 : TP8 (GND : E2)/PR-270/270A board
   CH2 : TP16 (GND : E1)/PR-270/270A board
   Trigger : HD (TP16/PR-270/270A board)
   Adjustment Point : ⊘RV9/PR-270/270A board
   Specifications : A = 0.6 ±0.1 µs





PR-270/270A BOARD (A SIDE)

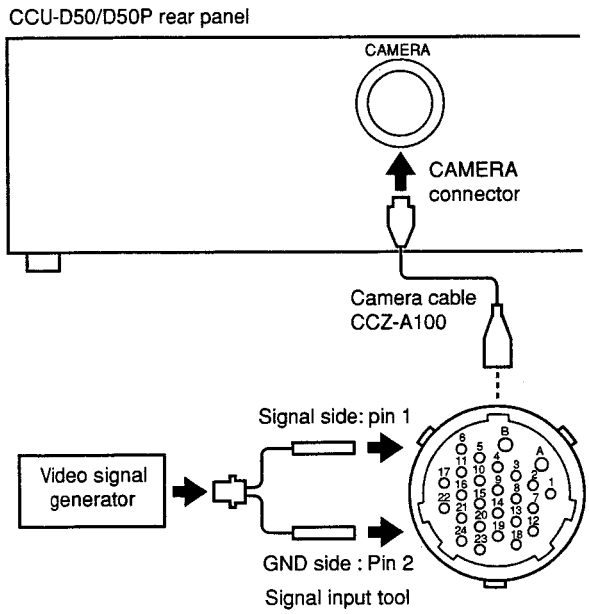
2-4-7. SDI/VBS Adjustment

Note

Be sure to perform this adjustment when RV1, RV2 and/or RV3 on the IF-879 board is replaced.

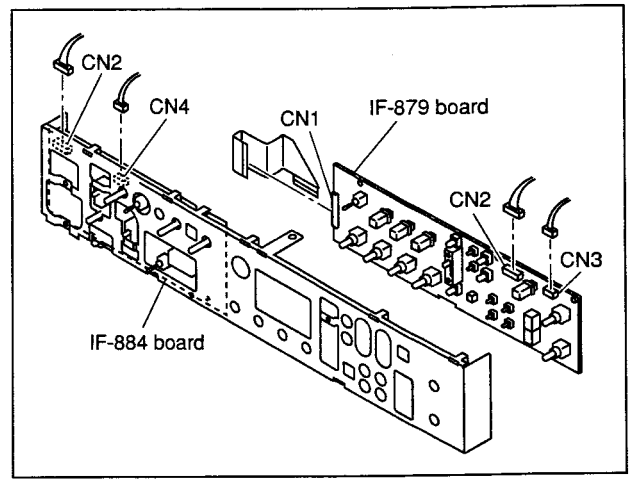
Equipment : Oscilloscope
Video signal generator (10 step signal with sync)
Camera cable CCZ-A100 (100 m)
Signal input tool

Connection

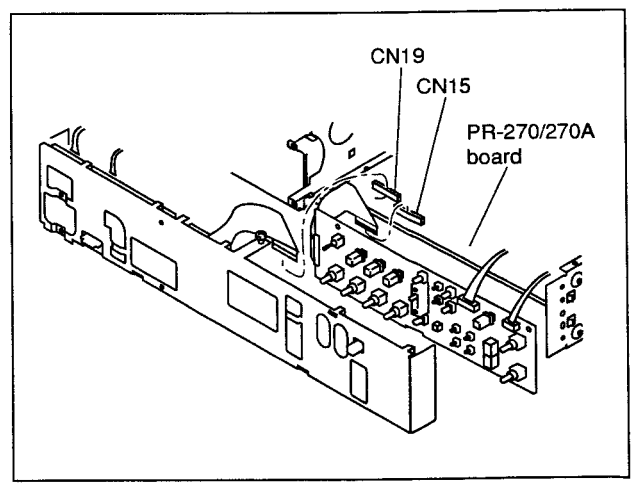


Preparations

1. CABLE COMP FINE screws (on the front panel) → Mechanical center
2. Remove the IF-879 board. (Refer to Section 1-15-2.)
3. Connect the flexible card wire to the connector CN1 on the IF-879 board, and connect the harnesses to the connectors CN2 and CN3 on the IF-879 board.
4. Connect the harnesses to the connectors CN2 and CN4 on the IF-884 board.



5. Connect the flexible card wires to the connectors CN15 and CN19 on the PR-270/270A board.

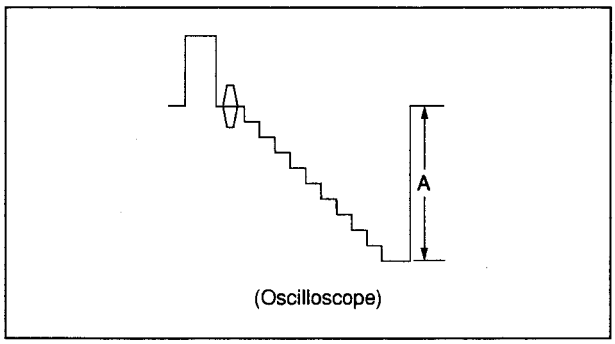


Adjustment Procedures

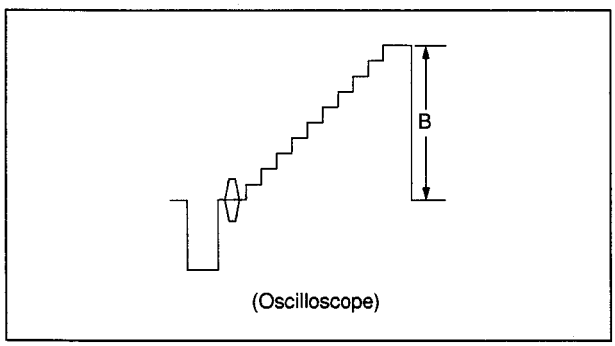
1. Connect the unit and equipment as shown in the connection diagram and input the video signal to the connector of the camera cable.

   Video signal input pin No. (Signal input tool)
   Signal side : pin 1/Camera cable
   GND side : pin 2/Camera cable

2. Measure the level "A" and write down it.
   Test Point : pin 4 of CN3 (GND : E2)/ IF-879 board

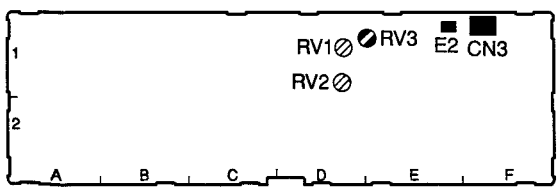


3. Test Point : pin 2 of CN3 (GND : E2)/ IF-879 board
   Adjustment Point : ⊘RV3/IF-879 board
   Specifications : B = A × 1.16



Setting after Adjustment

Restore the IF-879 board to the original position in the reverse order of steps 2 to 5 in Preparations.



IF-879 BOARD (A SIDE)

2-5. SDI Free-running Frequency Adjustment

Equipment : Frequency counter

Preparations

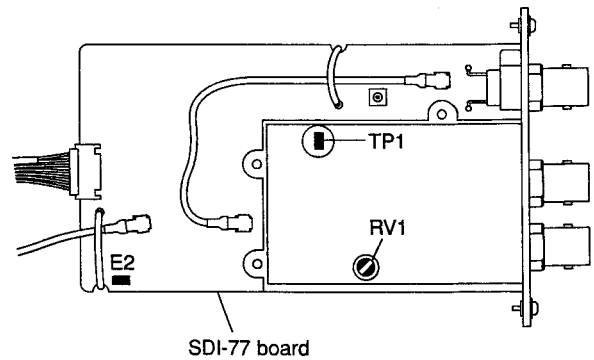
- When there is a cable connected to the SDI IN connector (on the rear panel), disconnect the cable.
- Put the CCU into the VBS mode. (Refer to the Operating Instructions.)
- Pull out the SDI unit assembly. (Refer to Section 1-15-1.)

Adjustment Procedures

Test Point : TP1 (GND : E2)/SDI-77 board
Adjustment Point : ⊘RV1/SDI-77 board
Specifications : 27.0 ±0.1 MHz

Setting after Adjustment

Restore the SDI unit assembly to the original position. (Refer to Section 1-15-1.)

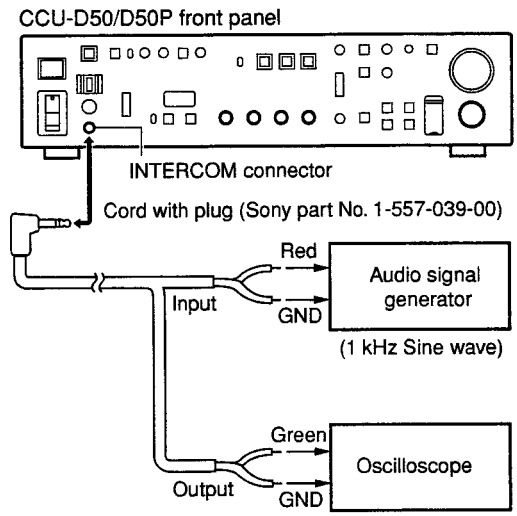


SDI-77 board

2-6. SIDE TONE Adjustment

Equipment : Oscilloscope
Audio signal generator
Cord with plug (Sony part No. : 1-557-039-00)

Connection

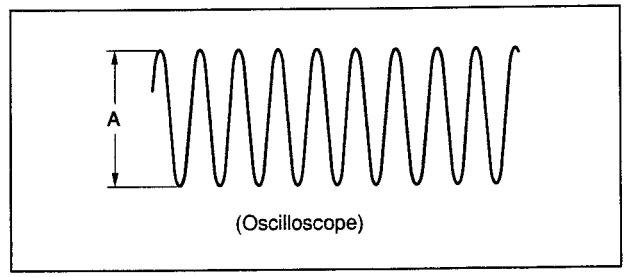


Preparations

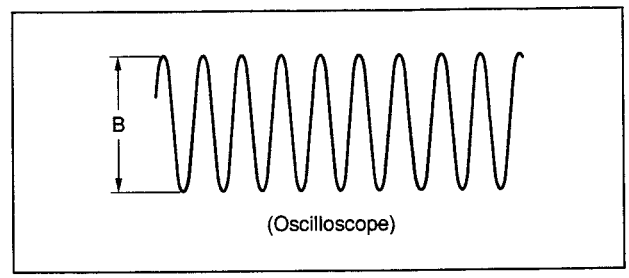
- INTERCOM volume knob (on the front panel) → Mechanical center
- Input the following signal from the audio frequency signal generator.
  Signal : Sine wave
  Frequency : 1 kHz

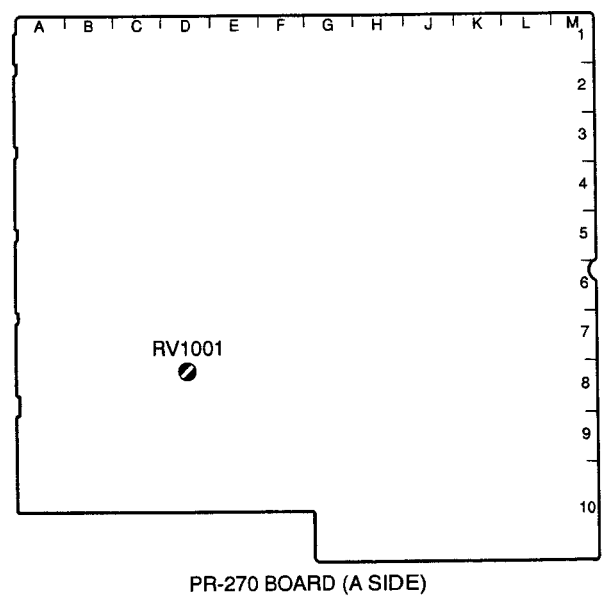
Adjustment Procedures

1. Turn ⊘RV1001/PR-270/270A board fully counter-clockwise (↺), and adjust the output control of the audio signal generator so that the output level "A" of the INTERCOM connector becomes 1 V p-p.



2. Test Point : INTERCOM connector (on the front panel)
   Adjustment Point : ⊘RV1001/PR-270/270A board
   Specifications : B = 430 ±20 m V p-p





PR-270 BOARD (A SIDE)

For the U.S.A. and Canada

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

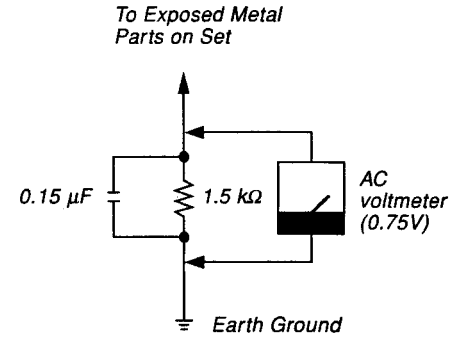


Fig A. Using an AC voltmeter to check AC leakage.